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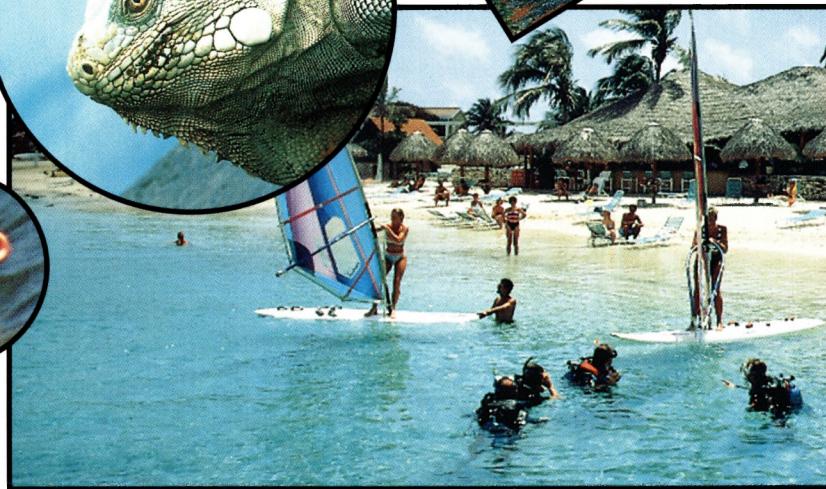
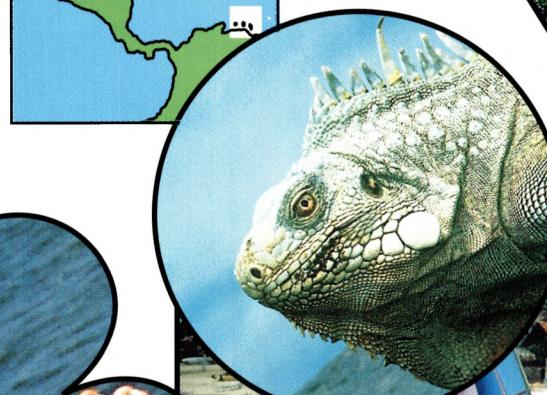
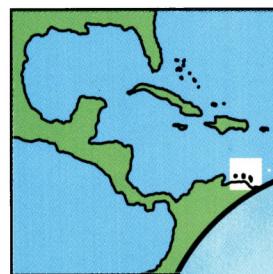
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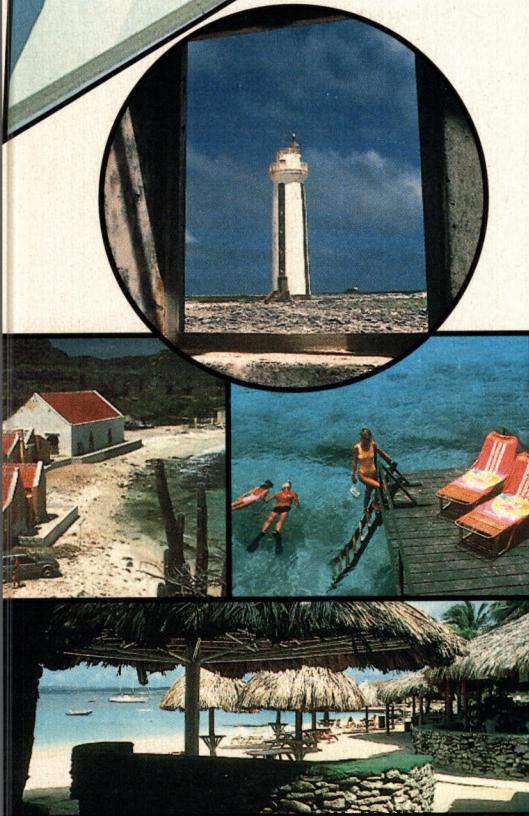
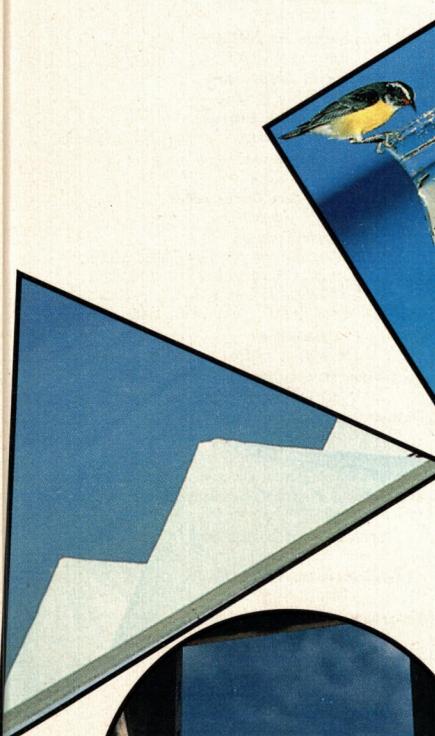
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Inside Scuba Diving

BY STEVE BLOUNT

PARADISE LOST—MAYBE

Like all truly sublime ideas, we assume this one sprang full blown from the pork-finder of a mid-level bureaucrat. If carried out, it will add what may become a stunning night dive in one of your favorite destinations. Picture if you will massive pillars soaring cathedral-like toward the surface and swathed shoulder-to-toe in a cloak of brilliant orange cup corals. Once properly befurred and knobbed by calcareous critters, the columns could—in about 10 years—become a

ment is ready to swap the refuge of *Sanopus splendidus*—the rare splendid toadfish—for a few boatloads of *Norteamericanae polyesteroous gaukus*, (otherwise known as the common snowbird).

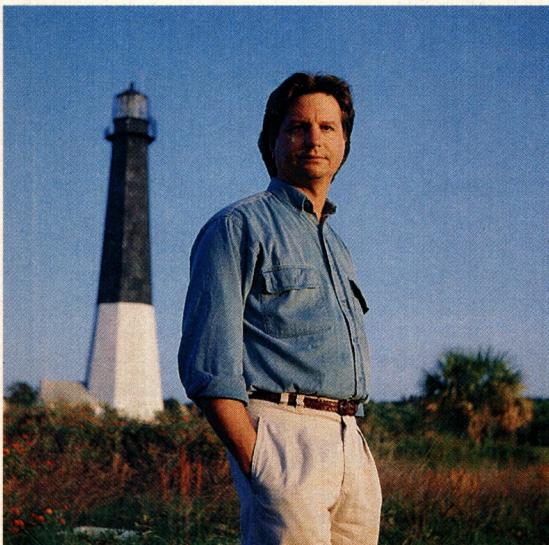
It's too cumbersome for these floating Coney Islands to lie offshore and ferry their cargo ashore by motor launch. The cruise ships want a broad platform across which they may disgorge a flood of celebrants, their senses anesthetized by their daily encounter with the ship's all-inclusive high-carbo breakfast buffet and anxious to plunder the shopping mall which will—conveniently—be built alongside the pier.

The fact that there is already a pier in Cozumel, and that the pier is for sale, has not dulled the desire of the government or the consortium of developers eager to build the dock-and-shop complex.

Diving built Cozumel. And the faithful return year after year to worship at the altars of San Miguel and Santa Rosa. How to throw the moneychangers out of the temple? The dive operators in Cozumel are on the case. Protest marches were held in San Miguel in November. An open letter from the people of Cozumel to President Salinas de Gortari appeared in a national newspaper. Now, they need your help. Turn to page 12 and read the details. If you're as mortified by the prospect of pillaging Paradise as we are, write or call to express your support. We can save Paradise if we act together—and if we act now.

fertile pasture for seahorses, a shelter for homeless octopuses, a fair riot of color and motion for nocturnal visitors.

Of course, there's a price to be paid for such a paradise. In this case, the price is Paradise itself. A plan made public this fall calls for a new cruise ship pier to be built in Cozumel—smack on top of Paradiso (Paradise) Reef. Ever leery of falling behind in the race to lure the socks-and-sandals crowd, the Mexican federal govern-



The contents of this publication, including diving techniques and use of diving equipment, reflect the individual experiences of the writers and are not necessarily the recommended practices of Rodale Press, Inc. and are not intended for the sole purpose of diving instruction. Individuals seeking to participate in any activities described in this publication should be properly trained and/or certified for such by a qualified professional diving instructor. Participation in diving or use of diving equipment by untrained individuals can lead to serious injury or death. Rodale Press, Inc., Rodale's Scuba Diving nor its contributors shall be liable for any mishap claimed to result from the use of such material.

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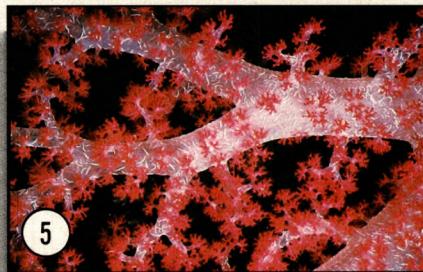
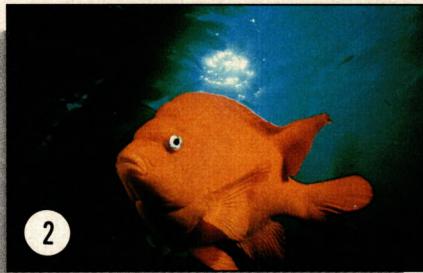
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FILL OUT AND MAIL TO: Sea & Sea Sweepstakes, 125 Schmitt Boulevard, Farmingdale, NY 11735

OFFICIAL ENTRY FORM

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Photo	Motormarine II	Other	Name _____
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3.	<input type="checkbox"/>	<input type="checkbox"/>	Zip _____ Phone () _____
4.	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	
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A Motormarine II Camera shot some of the photos seen above. Which ones? It's worth \$10,000 to one person who gets it right.

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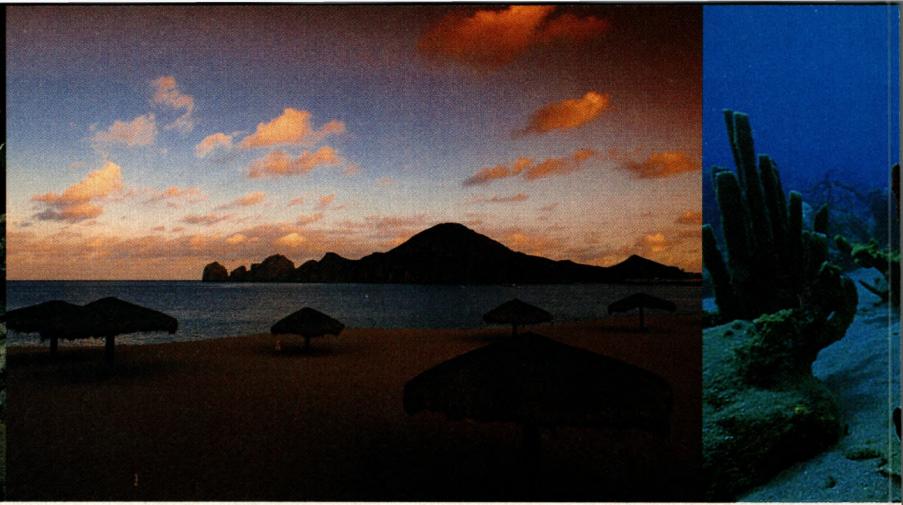
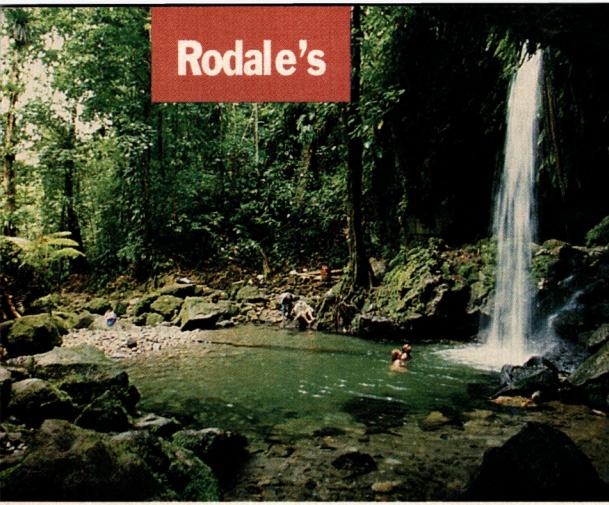
RULES—NO PURCHASE NECESSARY

To enter, complete this official entry form with your name, address, telephone number, and place a check mark for each photo under the camera you think was used to take that photo.

Mail your entry form in an envelope to: Sea & Sea Sweepstakes, 125 Schmitt Boulevard, Farmingdale, NY 11735.

IMPORTANT: ON THE FRONT BOTTOM-LEFT CORNER OF THE ENVELOPE, YOU MUST PRINT THE NUMBERS OF ONLY THE PHOTOS YOU BELIEVE WERE TAKEN USING A SEA & SEA MOTORMARINE II CAMERA SYSTEM. Entries received without these numbers printed on the envelope will be disqualified. Only one entry per person is allowed, and each entry must be mailed separately. One winner will be selected from among those entries which correctly identify the photos taken with the Motormarine II Camera System. The winner will be selected in a random drawing on May 16, 1994. Employees of GMI Photographic Inc., Sea & Sea, its affiliates, distributors, advertising and promotion agencies and their families are not eligible. Entries must be received by May 2, 1994 to qualify. All federal, state and local taxes on prizes are the sole responsibility of the winner. Odds of winning are determined by the total number of correct entries received. Winners may be required to sign an affidavit of eligibility. By accepting the prize, the winner consents to use of name or likeness for promotional purposes without compensation. For the name of the winner, send a self-addressed, stamped envelope to Sea & Sea Sweepstakes, 125 Schmitt Blvd., Farmingdale, NY 11735, by May 2, 1994. The winner will be notified by mail.

Rodale's



SCUBA DIVING

AWARDS

1994 READERS' CHOICE AWARDS: AND THE SURVEY SAYS...

More than 20,000 votes later, here are your picks for the world's top resorts, reefs, live-aboards and after-dive burgers.

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TRAVEL

IN SEARCH OF SEÑOR BIG

Covering ten days and a thousand miles of mostly virgin coastline, our reporter finds plenty of adventure where the monsters of Mexico swim the Sea of Cortez, one of the world's richest gulfs.

By Jim Sommers

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SIX-PAGE PULL-OUT MAP

Driving Ambition: Rev up the sport-utility vehicle and head south for eye-popping diving along the coast of Baja California.

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DOUBLE YOUR PLEASURE

From waterfalls to reef walls, Dominica offers a two-sided taste of the Caribbean before Columbus.

By Buck Butler

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WEEKENDER: NEW ORLEANS, LOUISIANA

Offshore at the big rigs is foot-stompin', head-first Cajun fun. Watch out for those attack cobia.

By David Taylor

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Leave it to the Lone Star state—where everything is bigger and badder—to serve up foot-long prawns and fish that hike.

By Paul Kvinta

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A WORLD AWAY: LOS ROQUES

Think the Caribbean is overrun? Think again: A hundred miles east of Bonaire an unsullied archipelago awaits your discovery.

By Bill Belleville

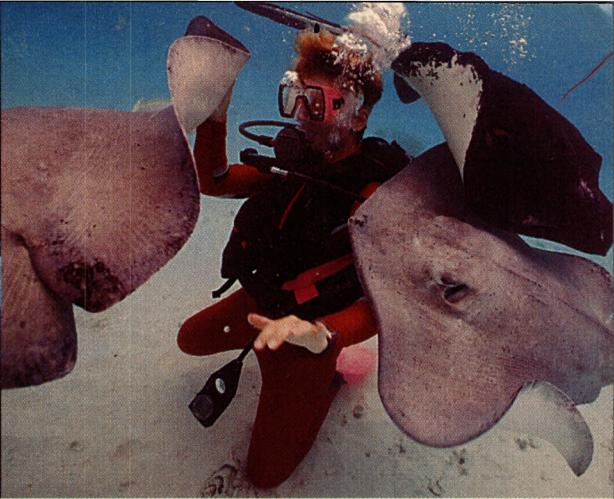
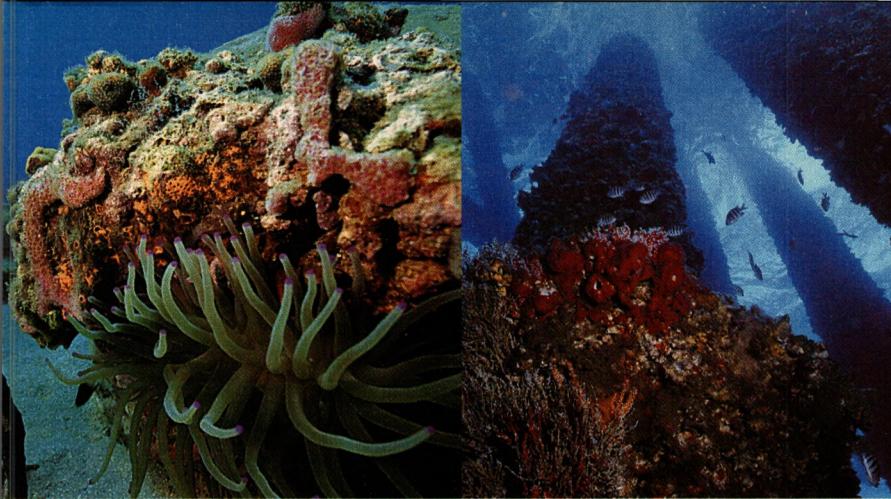
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ON TOUR

Take the island cure on can't-miss excursions to Cocos, Roatan and Gingerbread Shoals.

By John Brumm

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THE ABCs OF BCs

How much lift do you really need? Weight no longer—our follow-along chart shows you how to pick the perfect BC.

By Jon Hardy

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GEAR BAG: NEW AND UNUSUAL PRODUCTS

Shoot 'em up with a new professional camera, bracket your pony and snorkel with a pump.

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ONE FISH, TWO FISH, RED FISH, BLUE FISH

Hunting fish was never this much fun before. A pioneering survey project promises environmental awareness, some very real science and a chance for you to make a difference.

By Bill Belleville

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WORLD VIEW: BAY WATCH

Northern elephant seals are big—and strong—as pinnipeds go. But that doesn't stop intrepid volunteers from rescuing them and other marine mammals from human snares.

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ADVANCED SCUBA: WHY DIVE DRY?

The answer is a four-letter word. Grab your zipper and tug.

By Brian Merritt

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Why whales don't get bent two miles down, and bottom-dwelling love among Cayman's smooching stingrays.

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Photographer Doug Perrine captures Olympic swimmers in a graceful duet with wild dolphins. Baryshnikov, eat your heart out.

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Kodak's new underwater film can add color to your life—if you know how to use it.

By Cathy Church

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Gov. Pete Wilson gives California's sharks a reason to smile.

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New sound feared on Cozumel's Paradise Reef—crunch! NOAA opens *Monitor* sanctuary to civilian divers; the Keys' sexiest stars do it on film.

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WATER PLANET

He's more than an orca with a Hollywood smile, and many fear the star of *Free Willy* is being taken for a ride.

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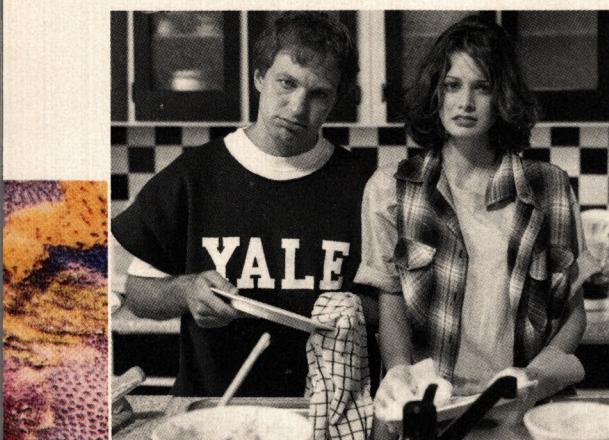
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DEALER LISTINGS

110-A-D



Cover photography by M. Timothy O'Keefe. Shot on assignment in Los Roques, Venezuela.



"We could really use a vacation



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LETTERS

White Shark Bill To Become Law

In your "Shark Attack" article (August '93) you mentioned my office as a contact for further information on shark conservation efforts. As a direct result, we have received a new batch of support letters for our already burgeoning file on California Assembly Bill 522.

AB 522 is a measure that would prohibit the taking of white sharks for commercial or recreational purposes throughout California state waters. This would also prohibit the "landing," into California ports of white sharks caught outside the boundaries. The only takings allowed would be incidental catches (very minimal) in gill net fisheries or those sharks taken under a scientific collector's permit for research or educational purposes.

The sponsor of the bill is the Center for Marine Conservation in San Francisco. Point Reyes Bird Observatory and the Pacific Coast Federation of Fishermen's Associations are co-sponsors. As the bill has made its way through both the Assembly and the Senate, numerous organizations have signed on as supporters of the legislation. The list is so diverse as to be almost unbelievable, including Friends of the Sea Otter, Defenders of Wildlife, Sportfishing Association of California, Surfriders Foundation and Central California Council of Diving Clubs, just to name a few. Historically, many of these groups oppose each other on marine resource issues and so we see this cooperation as a very healthy turn of events.

The shark oriented groups that have been involved are Pelagic Shark Research Foundation, American Elasmobranch Society, Shark Preservation and Protection Society and the Save the Shark Foundation. Our office suggests contacting any of these organizations if shark statistics are desired.

I am happy to announce that AB 522 has cleared the legislature and is now on its way to the governor's desk for a signature. The bill has maintained a unanimous vote record so we don't anticipate any trouble with Gov. Wilson.

I am happy that my colleagues feel comfortable in taking a bold step in a new direction. It has not been common practice in the past to act so proactively on a resource issue. Strange as it may seem, we often wait for a problem to go from bad to worse before we start discussing ways to solve it.

It is nice to know that people throughout the country are willing to voice their opinions after reading an article in a magazine. We enjoyed the mail.

DAN HAUSER
ASSEMBLYMAN, FIRST DISTRICT
CALIFORNIA LEGISLATURE

Editor's note: California Assembly Bill 522 was signed into law by Gov. Pete Wilson Oct. 11, 1993. The law takes effect Jan. 1, 1994.

High School Aspirations

I am a 15-year-old sophomore who hopes one day to become a marine biologist. Your article "Shark Attack" (August '93) really caught my attention and was greatly appreciated.

It's high time for people to open their eyes and realize that sharks are in great danger because of ignorant people. I truly hope more organizations can catch on to the danger these graceful creatures are in and join the struggle to save them. It disgusts me to know that people can actually be proud to have taken part in the extermination of an animal that, until now, has had no trouble surviving for millions of years through evolution.

T. VAUGHN
BANNING, GA

Environmentally Friendly in Paradise

While on a scuba trip last fall, three friends and I looked at a piece of property in the Caribbean. Little did we know or even dream that less than a year later we would be putting together a prospectus for a dive resort. Although we are years away from being operational we are very much interested in being as environmentally friendly as possible in all areas and stages of our development.

The criteria you listed for the Robert Rodale Environmental Achievement Award give us good guidelines. Would it be inappropriate to ask for specific information? The more environmentally protective measures we can build in, the better.

Who knows? Some day you may receive an application from four crazy divers who had an even crazier idea while in paradise (or was it too much rum punch?).

MELANIE VAUGHN
CINCINNATI, OHIO

We can't wait to see your application, Melanie. In the meantime, here are a few sources of information about environmentally friendly travel, from policy to implementation.

The Ecotourism Society publishes books and a newsletter, conducts seminars and provides a networking system for ecotourism operators around the world. Ask them about the books Ecotourism Guidelines for Nature Tour Operators and Ecotourism: A Guide for Planners and Managers. They also publish an annotated bibliography of ecotourism literature. For ordering and membership information, write to them at P.O. Box 755, N. Bennington, VT 05257 or call (802) 447-2121.

Here are two other excellent books:

Ecotourism: The Potentials and Pitfalls by Elizabeth Boo is a two-volume set available from the World Wildlife Fund, P.O. Box 4866, Hampden Station, Baltimore, MD 21211; (410) 516-6951.

Policies for Maximizing Nature Tourism's Ecological and Economic Benefits by Kreg Lindberg is available from WRI Publications, P.O. Box 4852, Hampden Station, Baltimore, MD 21211; (410) 516-6963.

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CIRCLE NO. 74 ON READER SERVICE CARD

Diving Wrecks, Diving Smart

The headline in *Newsday* read "Diver Dies In *Andrea Doria*." Although all deaths are tragic, this death had a greater impact on me than the others. This time it wasn't a nameless, faceless person I was reading about, it was someone I knew, had dived with and had dinner with.

As I sit and try to go through the details of what may have happened at that critical moment, I realize, with all the knowledge and facts we already know, we continue to make the same mistakes.

My greatest concern is the growing number of recently certified divers (with one to four years of experience) getting into the highly advanced wreck diving circuit before they're ready. Nothing can replace experience. You may do several deep dives, but that does not automatically qualify you as a "deep diver" ready for the *Doria*. You must be prepared emotionally. By that I mean feeling comfortable while blindly following your penetration line after you've been digging in the hold of a ship in zero visibility;

ty; or blowing a high-pressure line when you're 170 feet down; or when experiencing a free flow that substantially drains your air supply.

The point is, if you are not totally at ease emotionally when you're in a shallower wreck, why would you or your buddy feel you're ready to progress to a higher level without mastering the fundamental realities of wreck diving?

We as divers have to be more responsible not only to ourselves, but to our buddies and friends. Most of us would never consider letting a friend drive after he's been drinking. Yet, some divers will invite and even persuade another diver to go on dives clearly past their experience levels and limits.

It's frightening to hear how often on the deck of a dive boat divers turn to their buddies and say, "I didn't have a clue which way was out, I was totally lost." They blindly follow their buddies into the bowels of these silty wrecks on blind faith that no matter what, their buddies will see them through. Peer pressure has no place in this sport.

When divers are not ready for advanced deep diving, they die. It's that simple.

This is a self-governing sport, which means *we*, as responsible divers, have to look out for one another. That may mean sometimes saying no to our buddies if they ask us to vouch for them when the boat captain asks about experience level. Your buddy may be upset for a while, but I feel it's a decision you both can live with.

This sport can be very safe, enjoyable and rewarding when done correctly. You live a different adventure each time you descend into that beautifully alien world. The memories can last a lifetime. Let's pray they are safe and happy memories.

PHILIP S. CIULLA JR.

PRESIDENT

SILENT WORLD EXPLORERS

Geography Flub

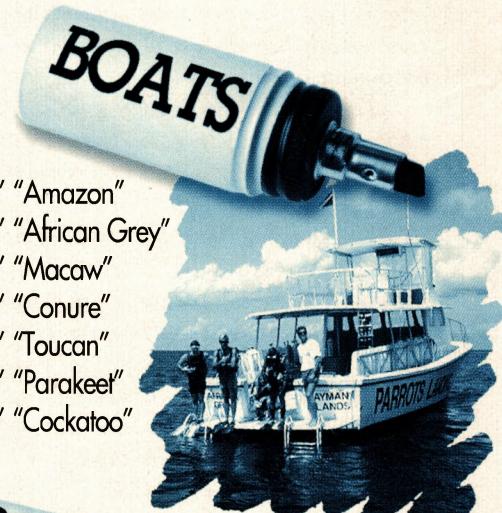
There was a small but potentially significant geographic error in "Rhapsody in Red" by Eric Hanauer (August '93).

Hanauer writes: "Trips generally embark from the *Egyptian* ports of

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Eilat, Sharm el Sheikh or Hurghada..." (emphasis added). Many Israelis would be quite surprised to have Eilat, the only Israeli city on the Red Sea, suddenly turned over to Egypt. Your readers who wish to embark on a Red Sea dive trip from Eilat would do well to fly into Tel Aviv rather than Cairo.

Thank you for an otherwise excellent article, one that makes us want to jump on the plane to go back.

BEN AND ANAT ZIFF
AMERICAN EMBASSY
PANAMA CITY, PANAMA

A Breath of Fresh (Caribbean) Air

I rarely write to comment on a magazine but it is refreshing to read honest appraisals of dive areas in *Rodale's Scuba Diving*.

I was especially impressed with the article on St. Vincent and the Grenadines (September '93), which I hope to make my next dive site. The beautiful photography showing the island and its people as well as the underwater shots were as fine as the incredible work on Papua New Guinea

by Paul Humann (September '93).

The obviously good interaction between writer Phil Trupp and photographer Amos Nachoum was a joy. I sometimes wonder if writer and photographer have been to the same place, let alone the same trip. Here, they have respect for one another as well as mutual love for what they are doing.

Keep up the good work.

SUSAN LEONARD
NEW YORK CITY

Wanted: Old Fins

I read your editorial "Fin Finale" (October '93) and can easily relate to your situation with old dive gear. I too suffer from Pack-Ratitis. Anyway, I hate plastic fins, and if you are disposing of your 1957 DeSoto fins, I would like to buy them. If you know of anyone with some Cressi-Sub "Rondine L" fins for sale, size 44 or 45 (10 to 11) please let me know.

CRAIG MECHEM
SANTA FE, N.M.
FAX: (505) 474-4068
TEL: (505) 474-3966

Shear Power

In general, I really like your magazine. But nowhere in your Gear Buyer's Guide (December '93) did you mention that some divers are abandoning knives altogether for EMT shears—the ones that cut pennies on late-night TV. I now carry both, but if I or somebody I care about gets tied up in monofilament, I figure I have them out of it with one snip of my shears. My knife has been pretty much consigned to removing stubborn O-rings from tank valves.

LEE F. JONES
SAN JOSE, CALIF.

What's on Your Mind?

If you have a question, a comment about the magazine or a complaint, you can talk to us toll free. Just dial 1-800-DIVE-LINE (1-800-348-3546) and leave a message. Or if you have touch-tone phobia, you can write or fax us at: *Rodale's Scuba Diving*, 6600 Abercorn St., Suite 208, Savannah, GA 31405; fax: (912) 351-0735.



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Prices are per person based on double occupancy and include UNLIMITED DIVING, hotel gratuities and taxes.

CIRCLE NO. 56 ON READER SERVICE CARD

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Prices are per person based on quad occupancy and include UNLIMITED DIVING, condo gratuities and taxes.

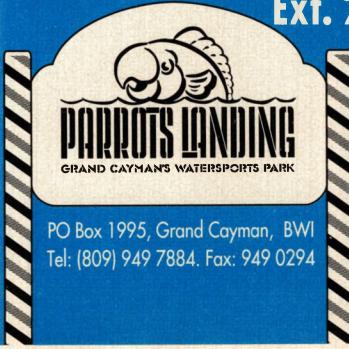
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Pesos For Paradise

Tyically, the islanders of Cozumel spend long sun-filled days snorkeling, tanning, drinking and reveling in their blissful isolation from the ravages of wacky Mexican mainland politics. But for months a political storm pitting divers against developers has been brewing beneath the island's utopian facade, and the fallout could include one of Cozumel's most celebrated resources—Paradise Reef.

In August, the Mexican government granted a permit to a consortium of Spanish developers known as "Group H" to construct an interna-

tional cruise-ship pier about two miles from downtown San Miguel and directly on top of Paradise Reef. The plan has outraged ecologists and dive operators, who have whipped up petition drives and letter-writing campaigns, spoken out on radio talk shows, and appealed directly to President Carlos Salinas de Gortari to halt the plan.

Attempts to reach Group H representatives at press time were unsuccessful, but one Cozumel boat pilot, Humberto Canarlo Medina, said the consortium had already built gasoline tanks in the area for a planned marina, and several

pilots anticipated large-scale construction would begin in November 1993.

Such a move would likely doom Cozumel's most accessible dive spot. Lying on the island's western coast, Paradise consists of five inland reef beds, each featuring a treasure chest of hard and soft corals and dozens of fish species, including the rare splendid toadfish. Since it sits just 200 yards from the shore and slopes gently to its deepest point at 60 feet, Paradise pro-

vides the most popular beach dive on the island, and boat operators estimate that at least one-third of all the second stops on two-tank trips occur on the reef. But the reef might be best known for its nocturnal richness—a plethora of eels, lobsters and stingrays draws roughly 80 percent of Cozumel's night dives.

Dive operators contend the pier construction and subsequent ship traffic will damage Paradise irreversibly. "The huge propellers dig deep holes in the sand, which in turn cover and smother the reef," explains Juan Leca, who runs the Dive House. Leca also notes that the loss of Paradise to diving would increase diver loads on nearby reefs such as Chankanaab, Yucab and Tormentos. Other operators concur: "We're mostly concerned that this is a national park area," says Kelley Coleman of Fantasia Dive Shop. "I'm afraid it will start in one small part and keep on going."

**DEVELOPERS
AND
ECOLOGISTS
FACE OFF
OVER A
CONTROVERSIAL
PIER PLANNED
FOR COZUMEL**



DAVID TAYLOR

The government realizes the proposed pier site is in an ecologically sensitive area, but it views the lure of new cruise ships as vital to the future of the island's economy. "The infrastructure of the existing piers is insufficient, and that necessitates the construction of a larger pier, because foreign companies give preference to areas where these piers exist to accommodate their cruise ships," says a recent report from the Department of Aquatic Ecology.

But dive operators say any economic benefits will go straight to the developers, who also plan to convert an empty piece of property on the adjacent shore into a marina and shopping complex for a captive cruise ship market. That's why, according to Aqua Safari's Bill Horn, the developers are uninterested in building a pier in downtown San Miguel or in purchasing the existing international pier, which is currently for sale. Horn, however, says he and his troops are not done fighting: "We have 7,000 petition signatures, which is more votes than have ever been cast on this island."

To voice your concern, contact Kelley Coleman at Fantasia Dive Shop, 011-529-872-0700, ext. 237, or Bill Horn at Aqua Safari, 011-529-872-0101 or fax 011-529-872-0661.

—PAUL KVINTA

SKI BUMS

That roar emanating from Monterey Bay these days is not the rhythmic pounding of California's majestic surf—it's the clamor of an unleashed fleet of personal watercraft, better known by Kawasaki's trademark, Jet Ski. Just when environmentalists thought they had successfully ousted these suspected kelp-grinders from the Monterey Bay National Marine Sanctuary, Jet Ski operators have returned in force, this time with the blessing of the federal court system.

Last August, a federal district court judge in Washington, D.C., tossed out National Oceanic and Atmospheric Administration (NOAA) regulations limiting personal watercraft to four small offshore areas in the sanctuary—roughly 15 square miles total—after ruling the restrictions arbitrarily targeted Jet Skis while allowing other vessels free range.

NOAA spokesman Brian Gorman concedes that the regulations did single out personal watercraft, but he explains that the unique mobility of those vessels demanded individual attention. "We argued that Jet Skis were special since they can operate so near to the shore," he says. "Their interaction with sea otters and sea birds is unique to Jet Skis." NOAA has not decided whether to appeal the decision, according to Gorman.

The legal flap began in late 1992 when the Personal Watercraft Industry Association (PWIA), a Monterey Kawasaki dealer and a personal watercraft owner filed suit against NOAA soon after the founding of the 5,312-square-mile marine preserve. The subsequent ruling delighted Jet Ski enthusiasts, who had wrangled with other user groups and environmentalists during the sanctuary's contentious, 17-year birthing process. "We believe the decision will have far-reaching effects on other governmental bodies who choose to discriminate against personal watercraft," says PWIA chairman John Donaldson.

Yet while Jet Ski users are happily revving their engines, environmentalists have been mustering forces. Vicki Nichols, executive director of Save Our Shores—a Santa Cruz-based group that filed a brief supporting the regulations during the litigation—says the group has filed a motion to intervene in the lawsuit whether NOAA appeals the decision or not. And Nichols says her group will also press for state and municipal legislation designed to restore personal watercraft restrictions.

NOAA, meanwhile, is completing a mandated study of vessel traffic in the sanctuary, and Gorman says those results could spur a whole new set of rules regulating all types of vessels within the preserve, including Jet Skis. —PAUL KVINTA

CAROL NORBY



Monitor Revealed

After more than a century lying undiscovered on the ocean floor, and another 20 years of protection by the federal government, the Civil War ironclad *Monitor* may be open to divers within a year.

"I think we may try it on a test basis and see how it works out," says John Broadwater, manager of the *Monitor* National Marine Sanctuary.

If it doesn't happen soon, there may not be much left to see. A recent expedition by the National Oceanic and Atmospheric Administration (NOAA) in the wake of hurricane Emily found the *Monitor* relatively unscathed, but the wreck is deteriorating nonetheless.

Mounting a NOAA expedition with submersibles costs around \$12,500 per day, so expeditions have been infrequent and often unsuccessful. One of the few civilian divers permitted at the site says private divers could make meaningful contributions to knowledge about the *Monitor*.

"We've encouraged them to do this every year since 1990," says North Carolina diver Rod Farb, author of *Shipwrecks: Diving the Graveyard of the Atlantic*. "I feel very vindicated."

Farb became the first private diver to visit the *Monitor* in 1990. He demonstrated that free-swimming scuba divers could effectively

explore the wreck, gathering both information and legal artifacts. In August, he became the first private diver to recover artifacts from the site—something that a \$300,000 NOAA expedition had failed to do a week earlier. Farb's dive team recovered five glass bottles, four of them filled with mustard.

Though it's impossible to predict how long until the *Monitor* collapses, major changes in the structure of the wreck can be seen in a period as short as a few weeks, Farb says.

Notions of raising the *Monitor* have been kicked around for years, but NOAA researchers now believe the ship is too damaged to move. The thick plating that protected it from small arms and artillery fire is virtually gone, and portions of the hull have collapsed.

The *Monitor* helped revolutionize fighting vessels. Though its 1862 battle with the Confederate ironclad *Virginia* (better known as the *Merrimac*) ended in a draw, the fact that both ships survived the five-

hour battle with no significant damage led navies to switch from wooden to steel-plated ships. The 173-foot ship sank in a storm on New Year's Eve 1862 and was discovered by Duke University researchers in 1973.

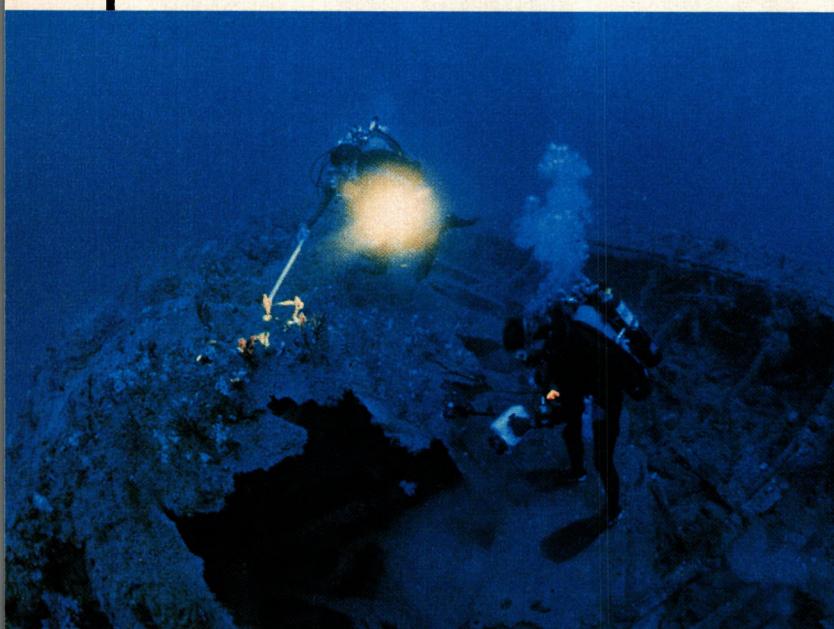
The site was declared a national marine sanctuary off limits to divers in 1975. Jacques Cousteau was allowed to visit the site in 1979, but poor conditions kept divers from ever reaching the wreck.

"One of the things we did this last time was to establish baseline values for the current health of the wreck so we can see how it is affected by divers," Farb says.

Although plenty of divers would like a look at the *Monitor*, don't get your gear bag yet. The *Monitor* rests in 235 feet of water, more than 100 feet below the limit for recreational divers. "It's the Mount Everest of shipwrecks," Farb says. Given the dicey waters and the great depth, it's likely only a few highly-qualified and trained technical divers will ever see it in person.

—SUSAN LADD

FARB MONITOR EXPEDITION 1992



IRONCLAD PROMISE: DIVERS INSPECT THE MONITOR, WHICH LIES AT 235 FEET OFF CAPE HATTERAS.



First-ever glimpse of coral spawning in the Keys.

An Affair To Remember

They lie in the dark, releasing clouds of gametes while strangers watch, snap photos and take notes—Peeping Toms of the first mass coral spawning ever witnessed in the Florida Keys.

Once a year, after sunset in the week following the full moon of August, corals throughout the planet's oceans release their eggs and sperm into the nighttime currents.

The first-ever glimpse of this coralline spectacle took place on the Great Barrier Reef off Australia in 1982. Nearly a decade later in 1991, a mass coral spawning was finally observed in the Atlantic by scientists at the East Flower Garden Banks off the Texas Gulf Coast.

This year's event in the Keys, the first witnessed there, did not come without its disappointments. Guided by earlier predictions, spectators flocked to watch the show put on by large star coral, *Montastrea cavernosa*, common star coral, *Montastrea annularis*, and other species of lesser star coral.

But this year, the Keys' lesser star corals defied prediction and remained inactive during the full moon of early August. "That full moon was blue," explains



Dr. Jim Porter of the University of Georgia. "The corals knew this and waited for the next."

They didn't have long to wait, according to Doug Perrine, freelance photojournalist who captured this year's love affair on film: "Lesser star corals held off until after the next full moon, around Sept. 7, to release their eggs, once again proving that nature is a lot more complicated than we give it credit for."

The global synchronicity of corals' sexual reproduction offers a unique view of their remarkable survival technique: overwhelm the opposition with numbers.

"It's like diving with a group," observes Dr. Porter. "When you dive with a crowd, your chances of

being eaten by a shark are lessened. Corals spawn simultaneously probably for that very same reason."

The significance of the spectacle in the Florida Keys reaches far beyond its mystery and beauty. "The fact that they spawned at all was a good sign, especially for lesser star coral," says Dr. Porter. "They had been on the decline in the Keys."

Dr. Porter suspects that a chance to observe coral spawning may bless the Florida Keys with a unique form of ecotourism.

"It's a very exciting moment," explains Dr. Porter. "Watching coral erupt and the fish feeding on the gametes makes for an amazing night dive. Bring lots of film."

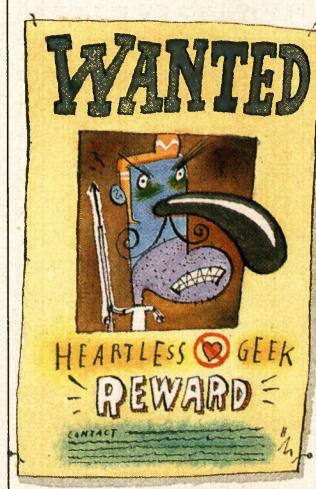
WANTED: TURTLE KILLER

A \$500 reward is offered for any information leading to the conviction of the heartless geek who wounded one loggerhead and killed another with a speargun in the Florida Keys.

The dead turtle was found butchered near Tom's Harbor Bridge while the wounded one was found offshore Ohio Key with two large spears in her neck. Florida Marine Patrol investigators reported both were speared from above—indicating that they were shot from a boat and not by a diver under water. They believe the same person is responsible for both attacks.

The wounded loggerhead is recovering at Richie Moretti's Turtle Hospital, which has offered the reward. Attacks on endangered species can also bring a stiff fine and even a jail term.

If you have information, contact the Florida Marine Patrol at 1-800-DIAL-FMP.



Show of Force

Divers in California have turned one of the biggest downsides of the sport—the relatively high cost of buying gear—into a big plus for the environment.

A bill to protect Catalina Island from aquarium fishers was considered dead in the state legislature after the fishermen argued it would cost them their jobs—a sensitive issue in recession-

only way to fight back was to show that stripping Catalina of colorful fish would cost jobs, too—far more than those of the estimated half-dozen aquarium fishers who worked the island.

"What do divers do most? They look at fish," Hall said. Having established the link between diving and a lush environment, Hall was free to draw out the big numbers that the industry represents for California—\$100 million in retail sales from 248 scuba stores in 1991, serving somewhere between 300,000 and 500,000 divers in the state.

The strategy worked. On Oct. 9, Gov. Pete Wilson signed a law permanently closing the lee side of Catalina to aquarium fishing, closing the other side until the year 2000 so that an environmental study can be completed and banning all collecting of garibaldi except for three months of the year.

To Hall, the lesson for divers with distressed environments in other states is clear. "Nobody spends any money to go and look at a spotted owl," he says. "But people spend a lot of money to go on trips and look at these things. Divers have a compelling argument if they'll get their act together."

—FRANK SPOTNITZ



WAYNE VINCENT

bound California.

Proponents such as aquaculturist Wil Borgeson argued that the cold-water environment was slow to recover from aquarium fishers who used slurp guns to suck thousands of fish out of the sea. Not only do prized catches such as the bright-orange garibaldi make for aggressive aquarium fish, Borgeson says they are usually sold to foreign customers without chilled tanks, spelling certain death.

But the conservation arguments fell on deaf ears. That's when Jim Hall of Ocean Futures realized the



HAN-PADRON ASSOCIATES

The Worms That Ate Manhattan

Thirty feet down with my fins planted in sludge, the assertion by scientists that the Hudson River is getting cleaner seemed, at best, hard to swallow.

My headlamp strained to give six inches of visibility. The water didn't flow as much as it shuffled along. Strange things passed by.

But evidence that the river is less polluted was right there at my glove tips: The wooden pilings where the QE2 docks when it comes to Manhattan were being drilled, chewed and carved up like so much termite fodder.

The culprits were two sea critters—a tiny shrimp named limnoria but known as gribbles, and a worm-like clam called teredo, or shipworm.

Also known as marine borers, their appearance in New York Harbor is one of the surest signs that the

water is ridding itself of the heavy metals and other invisible toxins that sent the borers packing decades ago.

"There's a strong correlation between the 1972 Clean Water Act and the collapse of piers consumed by borers," notes Bruce Bergmann of the U.S. Army Corps of Engineers.

Borers have been blamed for devouring everything marine from the wooden dike into which the Dutch boy stuck his proverbial finger, to the wooden ships of Christopher Columbus.

Officials in New York and New Jersey view their return with dread, and are scrambling to mount a defense by spending tens of millions of dollars to wrap the most vulnerable pilings with plastic so the borers can't breathe.

"It's a natural disaster," said Bill Van Allen, a materials engineer who has been spurring pier owners to act

Readers say they'll do whatever it takes to spend more time in the water.

READER POLL

Year of the Dive Trip

If calls to our toll-free reader poll are any indication, 1994 could be a banner year for dive travel. We asked if you're planning to make more dive trips this year than you did in 1993; 89 percent of you said absolutely yes.

Dive travel specialist Nancy French of Sea Safaris Travel believes the numbers reflect a burgeoning trend in the travel industry. "People today are traveling to do something," she says. "The leisure travel market seems to be off, but dive travel is on a consistent upswing."

Carl Roessler of See & Sea Travel says the sunny forecast may be a little premature, citing a recessionary "caution factor" that still affects the economy. Roessler thinks potential travelers may be seeing the coming year through rose-colored dive masks. "Everyone's optimistic, but when it comes to writing that big check for an expensive vacation and the kids need braces, it's a different story," he says.

But it may not be the pricey trips that everyone is planning. Many of our callers said that though their travel budgets aren't growing, they'll get that extra bottom time by making more affordable jaunts and diving closer to home. Whatever it takes—a second mortgage or self-installed braces—we'll see you on the descent line.

Reader Poll: High-Tech Spearfishing

The golden age of breath-hold spearfishing was the 1950s and early '60s, when legendary divers like Terry Maas, Carlos Eyles and Big Jim Christenson made descents to 160 feet to stalk broomtail grouper and blue fin tuna that were, literally, twice a man's size. These pioneer hunters used the underwater equivalent of bow and arrow to engage in a ritual as old as the sea itself.

But these were also days of abundance before the world's oceans were being tapped for 97 million tons of fish each year, according to a recent report by the Worldwatch Institute. Today, both spearfishermen and sport divers are outraged over the depletion of our oceans' resources by commercial fishing practices that allow one boat to sweep clean a 30-square-mile area per day.

The sport of spearfishing has changed, too. Scuba allows hunters hours of bottom time to hide out in camouflaged dive suits and let the fish come to them. Powerhead speartips (bullets that explode on impact) are the underwater equivalent of dynamite fishing: They kill by concussion—no accuracy required. Compressed air guns extend the killing range of hunters whose poor stalking skills keep them from getting close enough to use a conventional speargun, whose "firepower" comes from big rubber bands.

We at RSD believe it is time to ask: Is today's sport of spearfishing compatible with the need to conserve our dwindling ocean resources? Or does the relatively small number of spearfishermen, regardless of the equipment they use, pose little threat in comparison to commercial overfishing?



Should the use of powerheads and compressed air guns be outlawed for spearfishing?

DIAL: 1-800-DIVE-LINE (1-800-348-3546)

Follow the instructions to vote and record any additional comments.

Totals will be reported in a future issue of *Rodale's Scuba Diving* and forwarded to the National Marine Fisheries Service and state marine fisheries.

fast against animals that need only three summers to turn huge pilings into toothpicks.

"They've nothing else to do but eat 24 hours a day," said Ruth Turner, curator of mollusks at Harvard University's Museum of Comparative Zoology, who wrote her first paper on shipworms in 1948.

Turner, however, notes that borers are also the oceans' great recyclers, devouring driftwood that would otherwise clog shipping lanes, and ecologists are rejoicing at the borers' return.

"I don't see it as a problem, but rather as an affirmation of a lot of hard work," said Andrew Willner, New York harbor baykeeper for the Littoral Society, a conservation group fighting against the introduction of new pollutants into the water, as well as for the removal of cadmium, lead, PCBs, dioxin and various pesticides that have settled into the muddy bottom.

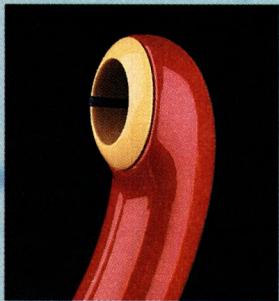
Willner reports that the Hudson, aside from getting less toxic, is also getting clearer. His Secchi tests, in which a disc is sunk on a measured line until it cannot be seen, ran up to 15 feet last summer—three times the normal clarity.

"It's astounding to look down and see crabs and things walking around on the river bottom," said Willner. "It was Caribbean clear."

Caribbean?

"Well, Florida clear anyway," Willner said.

—MICHAEL MOSS



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WORLD VIEW

BAY WATCH

BY JOHN L. STEIN

On the beach at San Miguel Island in California's Channel Islands National Marine Sanctuary, Peter Howorth creeps toward a baby elephant seal enmeshed in a gill net. Dressed in black neoprene, the six-foot six-inch Howorth, founder and director of the Marine Mammal Center, a rescue organization for wounded sea creatures, looks not unlike a Northern elephant seal himself. For all a nearby female knows, he is in fact another seal and is launching a covetous bid for her young. So while Howorth considers his small quarry, the female is also considering hers, and suddenly she lunges and takes a nip out of his backside. Minus some neoprene but otherwise unharmed, Howorth and his team succeed in freeing the young animal.

Soft-spoken Howorth will be the first to tell you that such close encounters are far from typical and that volunteers at the Marine Mammal Center of Santa Barbara go to great lengths to minimize personal risk during their rescues of seals, sea lions, dolphins and whales that are injured or entangled in nets. The rescues number an amazing 1,000 or more after nearly 20 years of operation.

Whether performed on mainland beaches, at the Channel Islands or in the open ocean, each rescue is carefully assessed before a team strategy is formed. Says Howorth, "There aren't any heroes. We recognize each team member's ability, and the more the better—sometimes we use as many as six to eight people. If the animal is on an island, we swim in by snorkel through the rocks and surf—much like a SEAL team, if you will. We try to get the whole

TOM CAMPBELL

Rescuers risk
treacherous surf and
vital body parts to
save California's
marine mammals.



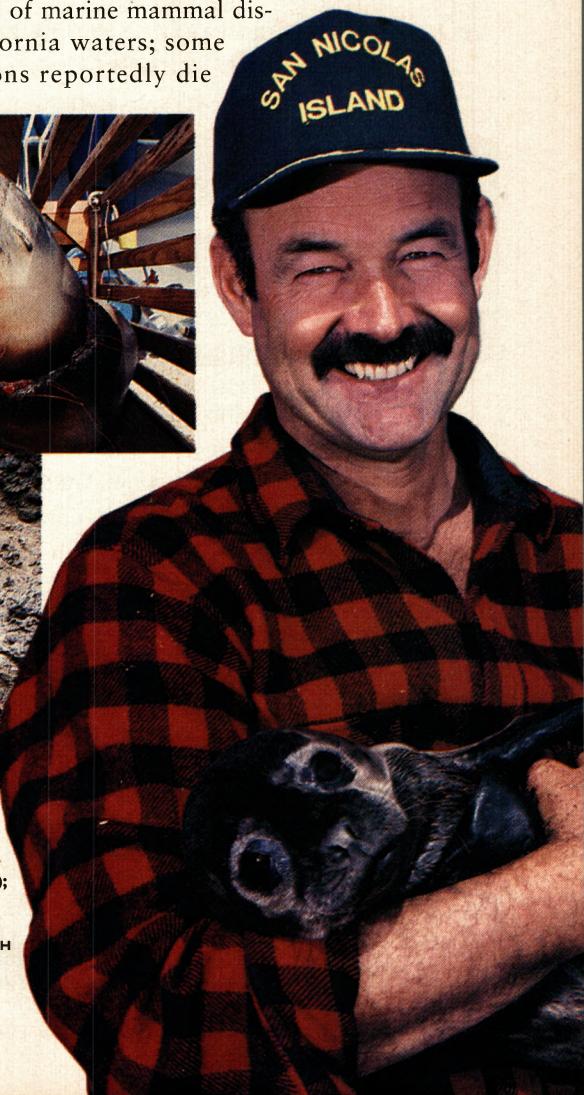
team on shore in their shoes so they can run. Once the animal sees us, then we converge. We're not sporting at all. We go in very fast and very hard, like a commando raid, to give the animals little chance to escape."

What the rescuers are converging upon, more often than not, is an animal tangled in a fishing net. According to the Sierra Club, gill net entanglement surpasses all other human causes of marine mammal distress in California waters; some 1,500 sea lions reportedly die



A FRIGHTENED SEA LION IS TRANSPORTED TO SAFETY (TOP); PETER HOWORTH (RIGHT) NETS A WOUNDED PUP WITH MOM LOOKING ON (ABOVE).

SAN NICOLAS
ISLAND



MARK HANSEN

The Sand Dollar Dive Vacation Rules:



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CIRCLE NO. 69 ON READER SERVICE CARD

WHO YOU GONNA CALL?

According to the National Marine Fisheries Service (NMFS), the hundreds of separate rescue programs around the country are conducted by disparate groups including marine aquariums, universities, private organizations and even individuals. We called NMFS, as well as stranding centers in various cities on the Atlantic, Gulf and Pacific coasts, to inquire whether there is a central switchboard that processes reports of stranded or injured animals nationwide. None currently exists.

Various levels of coordination do exist within states or regions. In Texas, which has cetacean (whale and dolphin) rather than pinniped (seal and sea lion) strandings, a statewide network is organized by Texas A&M University. One call to (800) 9-MAMMAL will send help to stranded animals in the Lone Star state and halfway through Louisiana. Likewise in Florida: Call (800) DIAL-FMP to reach the Florida Marine Patrol to report injured or stranded manatees or cetaceans.

In the Northeast, Boston's New England Aquarium (617-973-5247), Connecticut's Mystic Marinelife Aquarium (203-536-9631) and New Jersey's Marine Mammal Stranding Center (609-266-0538) are three of the many centers that field rescue calls between the Carolinas and the Canadian border. This regional stranding network, says New Jersey's Bob Schoelkopf, is one of the few that meet on an annual basis to problem solve and share techniques. The diving community, he adds, provides invaluable information about the location and condition of stranded, entangled and sick animals.

California, the state with the largest pinniped population, has a stranding network but so far no central number to receive calls. Area rescue centers operate in and around San Diego (619-222-6363), Los Angeles (310-548-5677) and San Francisco (415-289-7325), as well as in smaller towns like Santa Barbara (805-687-3255).

If you find a sick, injured or entangled marine mammal and are unsure about who to call, NMFS asks that you first call a local Coast Guard, beach patrol or state police office, which should in turn contact the closest stranding center. It is important to leave pinniped pups alone, however. If you find a solitary pup there's a good chance that it is not abandoned; rather, its mother is hunting and will return. Far too often, says NMFS stranding coordinator Dean Wilkinson, people think a solitary pup is an orphan. They then "rescue" the pup and separate it from its mother. If you're concerned about the welfare of a pup, Wilkinson suggests observing it from a distance for 24 hours. If it's still alone after that, then call the authorities.

each year off the Pacific Coast as a result of entanglement or gunshot wounds. Lightweight monofilament nets are virtually invisible under water and cost as little as a few hundred dollars—increasing the likelihood of entanglement and decreasing the incentive for a fisherman to risk freeing a trapped animal.

Cynics may argue that the 150-odd animals that the Marine Mammal Center saves each year (a 90 percent success rate, incidentally) can't possibly make a difference in overall populations. Howorth will politely argue otherwise. "You hear all the time that seals and sea lions are too common," he says. "Right now there are only six Guadalupe fur seals in American waters. They used to be here in the tens of thousands. We just released one from Sea World that they rehabilitated; counting that one and others we have just released, we have almost doubled the population of a threatened species in a month's time."

Rescue experiences can be bittersweet. Several years ago the Marine Mammal Center received a call from the local harbormaster indicating that an urchin diver had found a newly dead female elephant seal in the Santa Barbara Channel. The diver relayed an amazing account by radio: Attached to the female by umbilical cord was a newborn pup. The diver jumped into the water, bit through the cord, brought the 45-pound pup on board and stowed it in his sleeping bag for the ride home. Under the care and feeding of the Marine Mammal Center, the pup grew to over 300 pounds within five weeks.

Does such care violate the law of nature, that only the fittest animals should survive? Peter Howorth thinks not. "We're not playing God with every sea lion pup born with defects. We're mitigating the effects of humans on the environment. The bottom line is the animal's welfare. This is our objective, pure and simple. It's never going to change." ☐

John L. Stein is founder of Terra Firma Publishing, a Santa Barbara-based book publisher specializing in environmental topics.

Little ISLAND BIG Thrills



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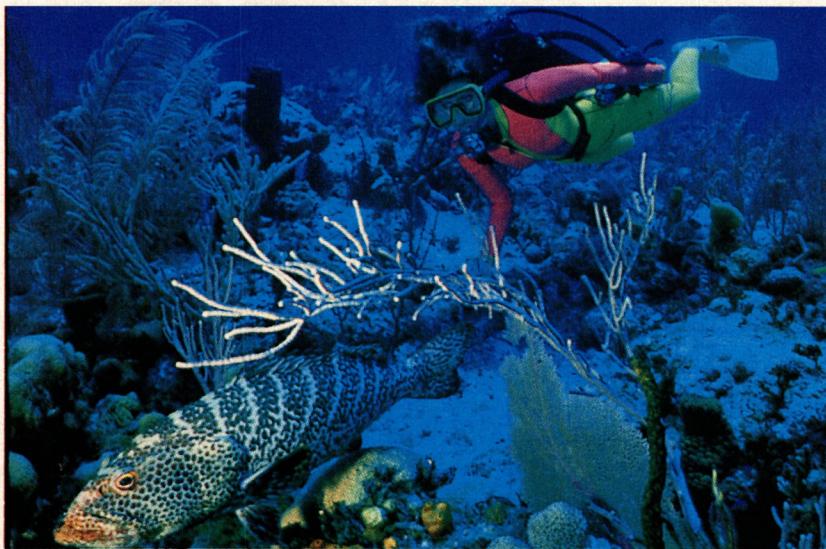


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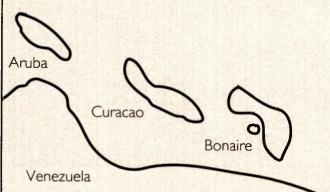
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Bonaire

DUTCH CARIBBEAN

AIR ARUBA FROM NEWARK; ALM FROM MIAMI AND ATLANTA

For information
call 1-800-U-BONAIRE

discover hidden pleasures

LOVE AT FIRST BITE

BY JOHN BRUMM

Why not say "I love you" to your diving spouse this Valentine's Day by shoving him or her into the water with a swarm of sharks? Rainbowed Sea Tours is making it possible beginning in February 1994 with two dive trips to Costa Rica's Cocos Island, famous for its schooling hammerheads and a host of other big pelagics atop breathtaking underwater terrain.

The 13-day dive trips, scheduled for Feb. 5 to Feb. 17 and Feb. 18 to March 2, will be on the live-aboard *Undersea Hunter* and feature Chris Newbert hosting a five-day underwater photography seminar. Cost is \$3,500 per person, including all diving and meals, the photo seminar and all Costa Rican national park fees. But if you purchase your airline tickets through Rainbowed Sea Tours you'll receive a discount of \$200 off the price of the tour. For an additional \$350, an optional land package includes airport assistance, two nights at the Hotel Bougainvillea, two dinners and a guided round-trip land transfer to the port of Puntarenas.

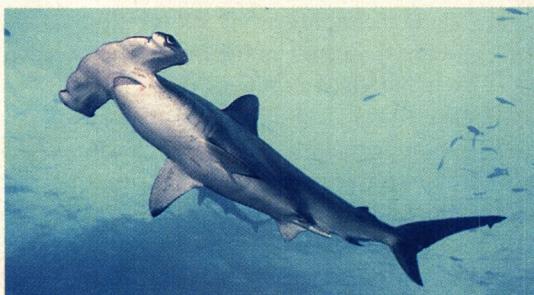
There is a maximum of 10 divers per trip. For more information contact Chris Newbert or Birgitte Wilms at RAINBOWED SEA TOURS, (800) 762-6827.

BE AWARE

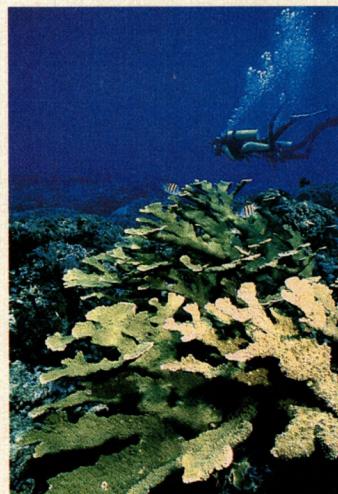
The Marine Science Education Institute (MSEI) was recently awarded a PADI Project A.W.A.R.E. Foundation Grant to develop an education program in the Bay Islands of Hon-

duras on local marine biology and ecology. As part of a coral reef biodiversity study currently under way on the island of Roatan, this new program will acquaint visiting divers as well as local residents with the rich marine diversity of the Bay Islands and the importance of protecting it. The educational

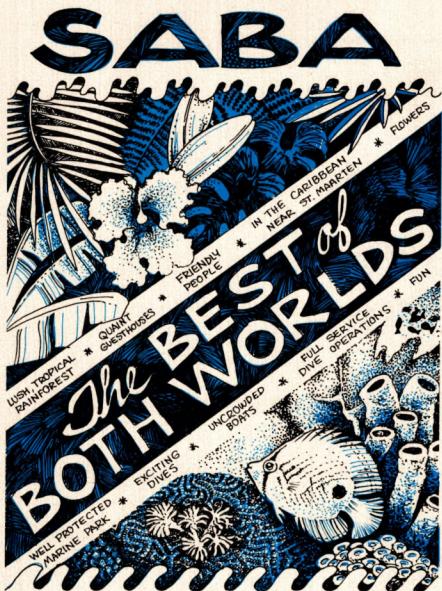
CHRIS NEWBERT
This February,
treat your
valentine to a
shark dive.



A ROSY-LIPPED BATFISH (TOP) AND SCALLOPED HAMMERHEAD (ABOVE LEFT) OFF COSTA RICA'S COCOS ISLAND; ELKHORN CORAL STANDS HIGH IN HONDURAS' BAY ISLANDS (RIGHT).



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Ph.011-599-462231, Fx.011-599-462350
CIRCLE NO. 67 ON READER SERVICE CARD

materials will be distributed by the Bay Islands Conservation Association (BICA), a local non-governmental organization which has earned international recognition for its conservation efforts.

In addition to the Bay Islands project, MSEI has upcoming seminars and dive site monitoring projects planned in conjunction with several Caribbean dive resorts and live-aboards. In Saba and St. Kitts, MSEI is working with the *MV Caribbean Explorer* on a reef monitoring project, including Coral Reef Naturalist seminars aboard the vessel. These one-week courses teach divers about the marine environment through discussions, slide shows, printed handouts and guided dives, covering everything from coral reef and mangrove ecosystems to introductory oceanography. Divers learn about the biology of reef-building corals, nocturnal changes on the reef, habitat zonation and factors threatening coral reefs, and also learn to identify various species of marine creatures during dives.

Those interested in assisting in the Bay Islands biodiversity study should contact OCEANIC SOCIETY EXPEDITIONS at (800) 326-7491. To participate in the Saba and St. Kitts programs, contact the *MV Caribbean Explorer* through EXPLORER VENTURES at (800) 322-3577.

DON'T ROCK THE BOAT

A new live-aboard offering divers luxury accommodations on a stable platform is scheduled to begin operating Jan. 30 in the Bahamas. The 78-foot vessel is called the *Nekton Pilot*, and its unusual Small Waterplane Area Twin Hull (SWATH) design is based on the same technology that allows oil platforms to operate in the rough waters of the North Sea. Waves pass over the pontoons and under the main deck without rocking the boat, providing a more stable oceangoing platform than monohull and even traditional catamaran designs.

The *Nekton Pilot* will cruise throughout the Bahamas, stopping at spots like Cay Sal, Andros, Bimini, Berry, the Exumas and Gingerbread Shoals, where divers will be treated to magnificent coral gardens, large pelagics, famous shipwrecks, dramatic underwater walls and blue holes.

The vessel features 17 air-conditioned cabins, each with private bath and ocean view; amenities include a comfortable lounge area with a large-screen television and VCR and a 2,000-square-foot sundeck with jacuzzi.

Seven-day trips from Fort Lauderdale range in price from \$1,350 to \$1,500. For more information contact NEKTON DIVING CRUISES at (800) 899-6753.

BORNEO BLAST

The travel/photography team of Burt Jones and Maurine Shimlock will be leading their first fully escorted trip to the new frontier of Sangalakki from May 18 to June 3. On their exploratory trip last summer they reported enjoying some of the finest diving of their lives among a profusion of mantas and turtles along pristine coral reefs. The 17-day dive trip costs \$3,200, which includes airfare from Los Angeles.

For those who'd like to visit the surrounding countryside, there's also a Borneo Land Extension trip scheduled for June 3-17 which will introduce you to the orangutans of Sepilok, the Kinabatangan River, the Mulu National Park and one of the largest limestone caves in the world. The land package costs an additional \$1,850.

For further information contact Jones or Shimlock at (512) 328-1201.

LITTLE CAYMAN'S NEWEST

The Little Cayman Beach Resort is finished and officially open. Located in Blossom Valley on the south coast (only three-quarters of a mile from the island's airstrip), the 32-room resort's white-sand beach fringes a reef-protected shallow bay.

Guests are housed in one of two pastel-colored buildings reflecting traditional Caymanian architecture; all rooms are furnished with both air-conditioning and ceiling fans. The resort also features a complete watersports complex with two new custom dive boats.

A variety of dive packages are available ranging from \$400 for three nights/two days of diving to more than \$1,600 for deluxe packages offering seven nights/six days of diving. For more information contact the LITTLE CAYMAN BEACH RESORT at (800) 327-3835. ☎

From the first moment we peered into the caverns below The Cayman Islands, we saw the dazzling beauty of unspoiled marine life.



They greeted us in unison. A gleaming school of silversides, illuminating the water with their graceful performance.

This is beauty as only nature could have created. A pristine underwater world overflowing with life. Brilliant with colour. And protected with the care that a precious resource deserves.

This majestic underwater world is just one of more than 200 unforgettable dive sites located beneath Grand Cayman, Cayman Brac and Little Cayman.

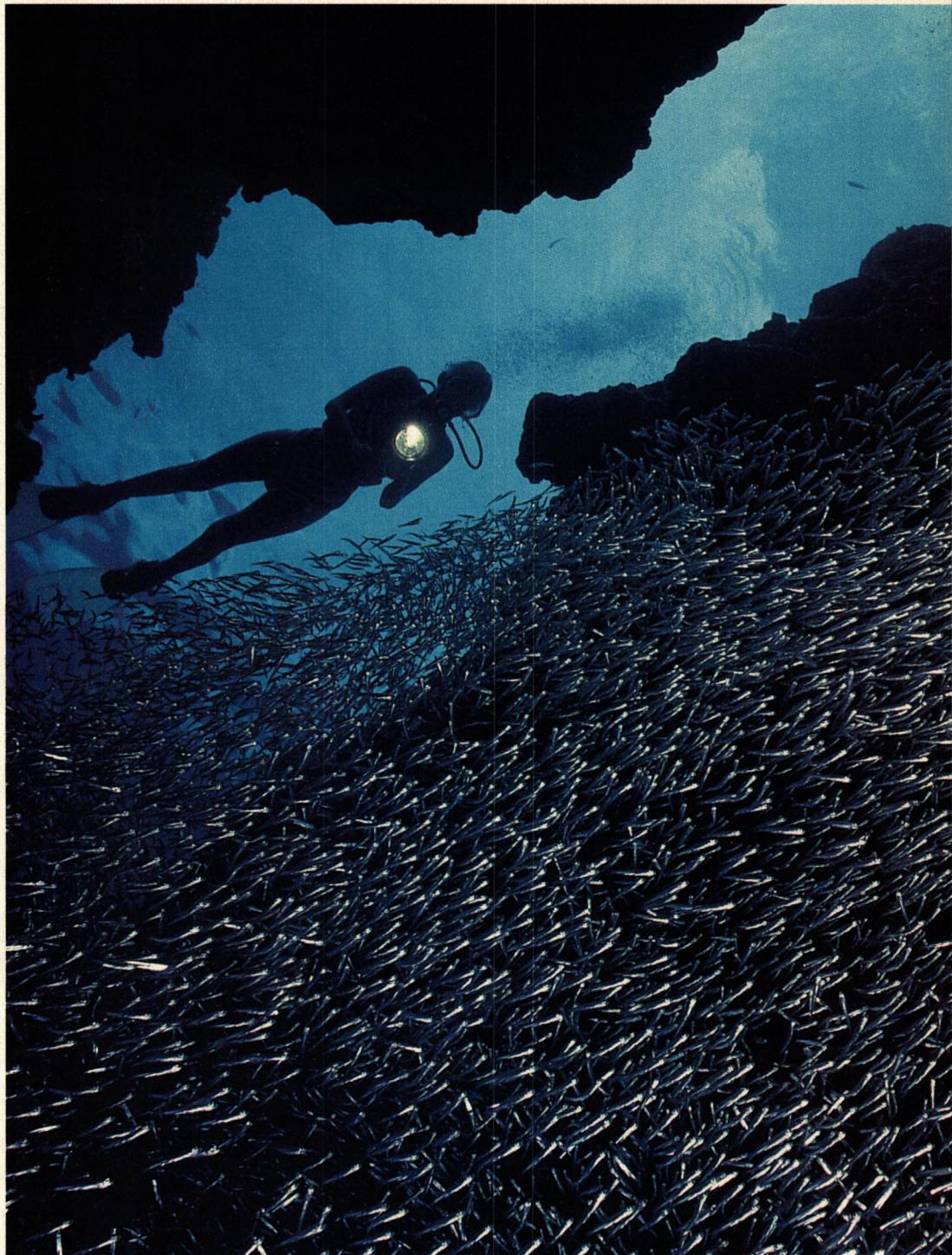
And there's more. Fabulous fishing. Watersports. And the friendliest people in the British Caribbean.

Fly here with the friendliest people in the sky. Cayman Airways 737 jet service offers comfort and hospitality from a host of U.S. gateways. For reservations or information, call your travel agent or

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From the moment you arrive, you'll savour the unspoiled beauty of The Cayman Islands as nature intended from the beginning. And as Caymanians intend for the future.



CAYMAN ISLANDS

“Those who know us, love us.”

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When you're out there testing the elements, the last thing you want to do is test your luck. So you fire up the 150 horses in your Toyota 4Runner. Switch into all fours with "shift-on-the-move" 4WDemand. Then you take on whatever nature throws your way. With the kind of ground clearance that can handle almost any terrain. Hi-Trac inde-

pendent front suspension. And legendary Toyota quality. Plus, it doesn't hurt to know the 4Runner has also been ranked by its owners as Best Compact Sport Utility Vehicle in Initial Quality three years running.* But that doesn't really surprise you, now does it? The 1994 Toyota 4Runner SR5 V6. For the

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*J.D. Power and Associates 1991-1993 Initial Quality Studies™ 1993 study based on total of 11,719 consumer responses indicating owner-reported problems during the first 90 days of ownership. Includes compact sport utility vehicles. Buckle up! Do it for those who love you. © 1993 Toyota Motor Sales, U.S.A., Inc.

GEAR BAG

New-and Unusual-Products

*A beacon in
the night; a snorkel that
keeps the water out.*

GO PRO

The Sea & Sea division of GMI Photographic has released a new version of its Motormarine II camera system. Called the Seamaster Pro, the new camera comes in a professional gray finish and has all of the features of the Motormarine II including through-the-lens (TTL) flash automation, motorized film advance, power film rewind, DX film coding which automatically sets the correct ASA/ISO film speed, a low-light warning LED and a TTL confirmation light.

Rated to 150 feet, the Seamaster has a small built-in

strobe for use above water and a built-in 35mm f/3.5 lens. The Seamaster accepts the full range of Motormarine II lenses (20mm, 16mm, 1:3 macro and 1:2 macro) which can be attached while under water, allowing photographers to switch from wide-angle to macro without surfacing. A limited edition Seamaster set (including a gray YS-



FRAZELLI



KEITH TOLMAN

The new Dive Beacon (above); the Parkway Pro Am HD Dry Suit (right) keeps divers high and dry.



The new DiVaire snorkels are sure to keep you breathing dry with their patented system of water circulation (above); The Seamaster Pro (left) is Sea & Sea's latest offering.

DIVE CABO

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50 TTL strobe) with a two-year warranty is also available. Suggested retail price for camera and strobe is \$1,450. For information or a dealer near you, contact: GMI PHOTOGRAPHIC, (516) 752-0066; fax (516) 752-0053.

LIGHT UP THE NIGHT

Underwater Kinetics' new Dive Beacon is an inexpensive, battery-powered personal marker beacon that outlasts chemical light sticks. When attached to a snorkel or tank valve, the Dive Beacon signals a diver's exact location in dark waters. The Dive Beacon kit includes a high-brightness red LED, a xenon gas-filled incandescent lamp that can be directed in a narrow or wide beam, two AAA batteries and a lanyard. In normal use, the red LED will last for at least 24 hours' worth of diving. For highest visibility but short battery life (less than two hours), the xenon lamp is recommended. To preserve night vision, the red LED with a narrow beam works best.

The Dive Beacon retails for between \$19 and \$21. For more information call UNDERWATER KINETICS at (800) 852-7483 or (619) 744-7560; fax (619) 744-7320.

A BREATH OF FRESH AIR

A unique looking new snorkel from DiVaire has been designed to provide air that is 60 percent fresher than what a conventional snorkel provides. The DiVaire admits fresh air at the top, while venting used air from the exhaust valve at the side, helping reduce carbon dioxide buildup and the effects of hypercapnia: headaches, chest tightness, hyperventilation and fatigue. The snorkel's interior has been engineered to allow easy clearing of water that may enter—the patented side exit combined with an internal deflector and a mid-barrel "fluid pump" forces water out of the snorkel at the side above the waterline. When submerged, the snorkel's intake and exhaust valves use air pressure from your mouth to seal themselves, usually allowing the snorkeler to surface without needing to clear before breathing.

The DiVaire snorkel, with a bite-wings mouthpiece and an integrated

quick on/off mask strap clip, retails for between \$55 and \$65. Dealers should contact DiVAIRE at (313) 960-1414; fax (313) 624-7109.

DO YOU KNOW HOW TO PONY?

A new pony bottle bracket developed by veteran diver Chris Angelow is a simple and durable device enabling divers to carry more air with little added weight. The no-strap, no-band bracket can be used to carry either 14- or 30-cubic-foot ponies, and instructions are included for permanent and single-dive installation. Angelow is so confident of his product that he guarantees it for life—if the bracket breaks, send him the pieces and he'll send you a new bracket.

The price for suppliers is \$35 plus shipping; suggested retail is between \$55 and \$80. To order, contact CHRIS ANGELOW, 1414 E. Beach Dr., Long Beach, NC 28465; (919) 278-9278.

HEAVY-DUTY AND DRY

Parkway now offers a heavy-duty version of its soft rubber Pro Am dry suit. Manufactured by the Gates Rubber Co. in Scotland, both the standard Pro Am and the Pro Am HD are constructed of natural rubber with EPDM added, which withstands damage from sunlight, ozone and chemicals. The 18-pound Pro Am HD model is approximately 50 percent heavier than the standard suit; both models are built for durability, comfort and warmth. The exterior is bonded to a two-way stretch nylon lining with extra reinforcement at the boot soles, shins, knees, crotch, waist and shoulders. Seams are guaranteed for the life of the garment.

Like the standard Pro Am, the HD model provides an easy step-in entry with an across-the-shoulder air/water-tight Dynat zipper. Double-soled boots are attached. Air is added to and purged from the suit with Cyclocal push-button low-pressure valves.

Available in black or red, both the standard Pro Am and the HD are offered in small, medium, large and extra-large sizes. The standard Pro Am carries a suggested retail price of \$1,550 while the HD goes for about \$1,820.

For more information contact PARKWAY SYSTEMS at (908) 721-5300; fax (908) 721-4016.

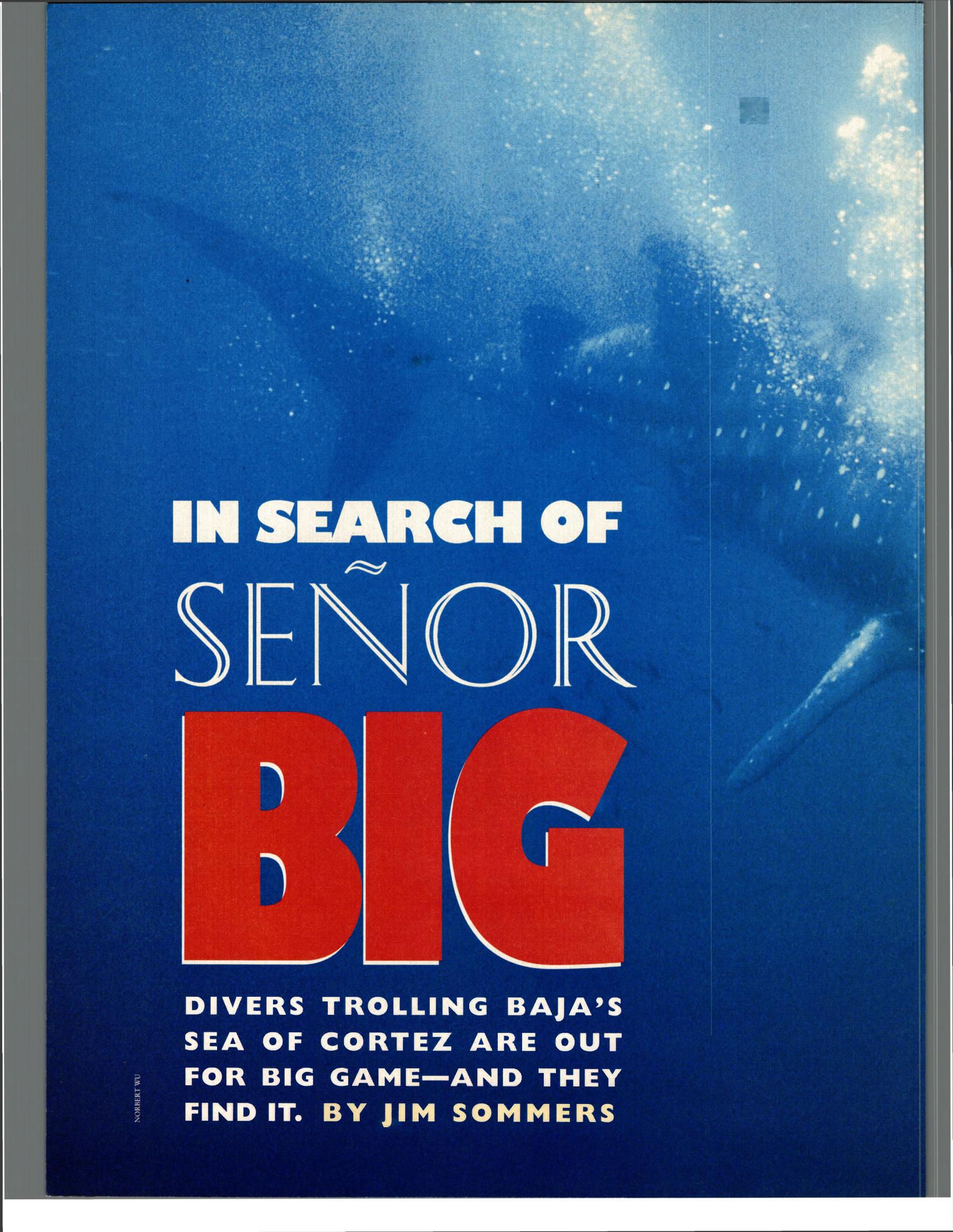


**500 years ago,
Columbus would have
been over your head.**

In 1493, Columbus sailed with 17 ships and 1500 men on his Second Voyage of Discovery. On Nov. 14 of that year, he sent a landing party ashore at Salt River, St. Croix. The Dropoff at Salt River, shown here, is called by divers who know "one of the best dive sites in the entire Caribbean." Send or call for our " Dive Guide." USVI Division of Tourism, P.O. Box 471268, Miami, FL 33147, 1-800-USVI-INFO.

St. Croix St. John St. Thomas
The American paradise. United States Virgin Islands

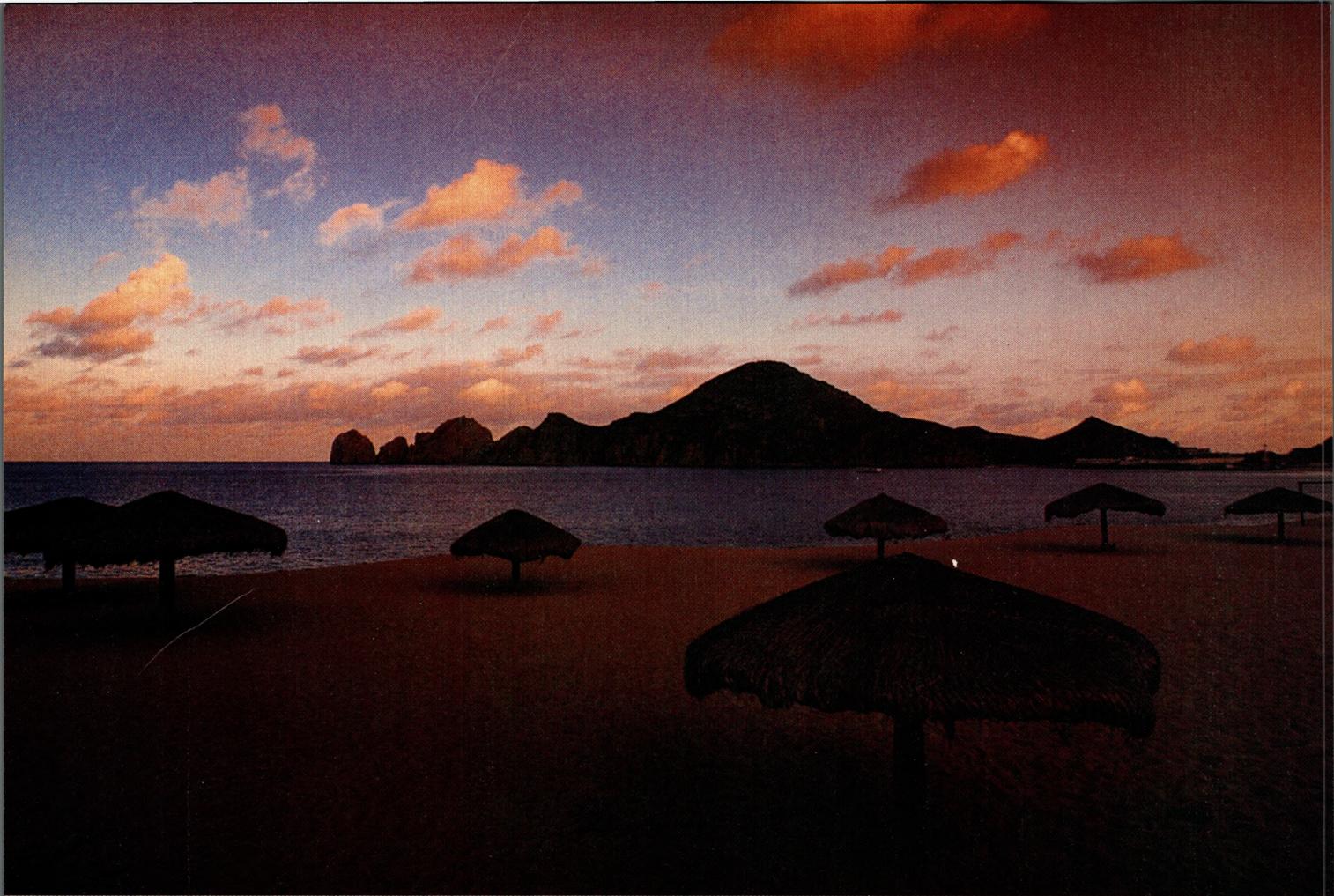
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IN SEARCH OF SEÑOR BIG

**DIVERS TROLLING BAJA'S
SEA OF CORTEZ ARE OUT
FOR BIG GAME—AND THEY
FIND IT. BY JIM SOMMERS**





We cling to the anchor line, human dive flags flapping in the Sea of Cortez's underwater breeze. Safety stop. Dive over. A shadow wide as a cruise ship drifts by. I look up and my mask plate is filled with white spots and blue skin. A whale shark is swimming through us like we're laundry on *his* line.

Behind a goatee of remoras I can see his long grin. Is it mockery? A friendly greeting? The sweet contentment of knowing you're the biggest fish in what has been called the world's richest sea? He lumbers past like a mile-long

freight train, disappearing into the vague blue distance.

Mental note: In the Sea of Cortez, Señor Big favors you with a visit when you least expect it.

They say you're not supposed to come down here looking for the big stuff—manta rays with 20-foot wingspans and clearance to land at O'Hare, whale sharks, schooling hammerheads, marlins taller than Manute Bol. They say overfishing has made encounters with Señor Big too unpredictable. Content yourself with the 250 species of reef fish and 750 species of other fish—more fish of different sizes, shapes and colors than just about anywhere else on the planet.

And that's good advice if you're down just for a weekend—entirely possible since even the southernmost tip of Baja is still only a few hours

CLOCKWISE FROM ABOVE, SUNSET ON LAND'S END BEACH, A QUIET COVE IN CABO SAN LUCAS BAY, A WHALE SKELETON ON THE BEACH AT PICHILINGUE NEAR LA PAZ.



6 PAGE PULLOUT



new divers to veterans, sometimes the current can be substantial and the visibility low. Conditions can change abruptly in the Sea of Cortez, and divers must possess good boat diving skills in case of rough seas and feel comfortable in strong current or low visibility.

GETTING THERE

At press time you can fly to Los Cabos from Los Angeles for about \$250 round-trip; you can also get nonstop or direct flights from Denver, Phoenix, San Diego and San Francisco. Airlines servicing San José del Cabo/Cabo San Lucas include Alaska Airlines, Aero California, Aeroméxico and Mexicana Airlines. From Los Angeles to La Paz and back costs a bit more—about \$350 on Aero California or Aeroméxico (which also flies from Tucson). You can also fly into Loreto from Los Angeles on Aero California for about \$450 round-trip.

ACCOMMODATIONS

There are a variety of guest houses, hotels and resorts along Baja's southern Sea of Cortez ranging from budget to super-deluxe. Check with your travel agent for further information. Divers looking to rent a condo can make arrangements through Creative Leisure, (800) 426-6367 (U.S. and Canada) or Mexico Condo Reservations, (800) 262-4500 (U.S.) or (800) 654-5543 (Canada). Wholesalers who handle diving and accommodations in the Sea of Cortez area include Adventure Express, (800) 443-0799 (U.S.); Fantasia Destinations, (800) 336-3483 (U.S.); Holiday Express, (800) 873-3415 (U.S.); International Diving Expeditions, (800) 544-3483 (U.S.); Innerspace Adventures, (800) 833-SEAS (U.S. and Canada); Landfall Productions, (800) 525-3833 (U.S. and Canada) or (510) 794-1599 (California); the PADI Travel Network, (800) 729-7234 (U.S.); Pacific Coast Adventures, (800) 491-DIVE; Plaza Vacations, (800) 635-8483 (U.S. and Canada); Poseidon Ventures, (800) 854-9334; Rascals In Paradise, (800) U-RASCAL (U.S. and Canada); Scuba Voyages, (800) 544-7631 (U.S.); See & Sea, (415) 434-3400; Sea Safaris, (800) 821-6670 (U.S. and Canada); and Tropical Adventures, (800) 247-3483 (U.S. and Canada).

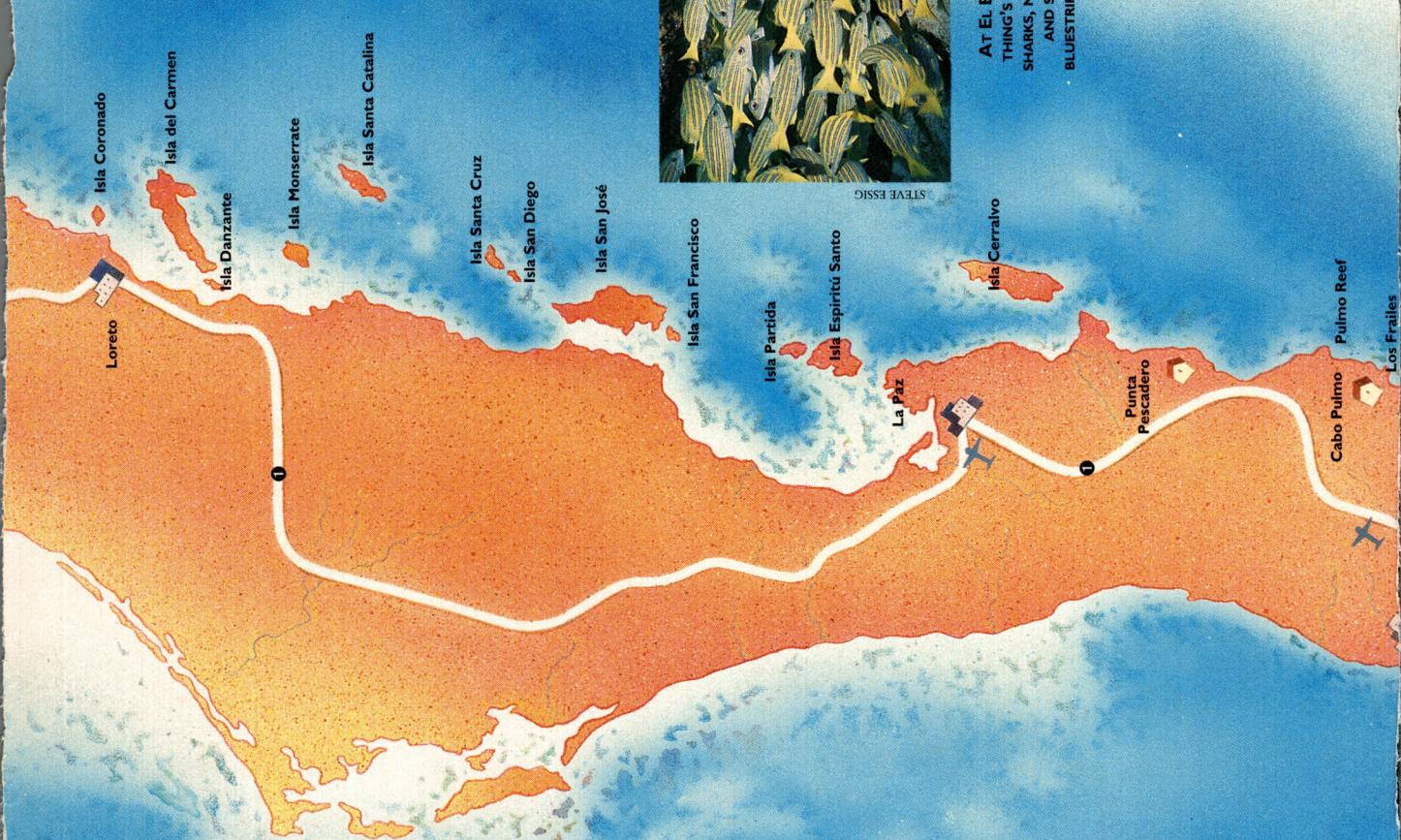
DIVERSIONS/NIGHTLIFE

SPECIAL ATTRACTIONS: Cabo San Lucas is Baja's hard-core party town, but you can also arrange a glass-bottom boat trip, a whale-watching or sunset cruise, and even an ATV trip to Cabo Falso (an 1890 lighthouse) or La Candelaria (an isolated Indian pueblo in the mountains). San José del Cabo, about 20 miles east, is much quieter in nature unless you happen to be there on March 19, when the festival of the patron saint of San José del Cabo is celebrated with a fair, music, dancing, feasting, horse races and cockfights.

La Paz translates as "Peace," a name which fits this quiet, family town full of friendly people. Glass-bottom boat trips, cruises to the sea lion rookery and whale-watching excursions can all be arranged, as can trips to visit the Anthropology Museum and Our Lady of La Paz Mission. If you visit La Paz in February, you'll experience Baja's biggest and best Carnaval/Mardi Gras celebration; in March there's the Festival of the Whale; and on May 3 the city holds a festival celebrating its founding by Cortez in 1535.

Fishing remains Loreto's primary lure, but it's also a good base for whale-watching and mountain expeditions. In Mulegé be sure to visit the circa 1705 Santa Rosalia de Mulegé Mission, behind which sits a mirador featuring a spectacular panoramic view of the town, its winding green river and the thick palm groves that spread from the river to the desert mountains.

GROUND TRANSPORTATION: Car rental rules change often in Mexico. Cars are easy to rent if you have a charge or credit card, are 25 or over, and have a valid driver's license and passport with you; without a credit card, you'll have to leave a hefty cash deposit. Car rental is more reliable (and usually cheaper) if arranged at least a week in advance. Be wary of high-season and mileage-added rates, and be sure to get specific information about insurance and deductibles, which may vary greatly among rental companies. Many credit card companies offer cardholders free rental car insurance—consider not using it in Mexico, for several reasons: If you buy insurance, you pay only the deductible, which limits your liability. Should you have an accident (or if the car is stolen or vandalized), you must pay for everything before you can leave the rental car office, including the car's full value if it is unrepairable—a determination made only by the rental car company—and you may be jailed until all restitution is made to both the company and any injured parties. The best idea is probably to take both collision/damage and personal accident insurance from the rental company. No matter what, though, your insurance is invalid if you have an accident



AT EL BAJO EVERYTHING'S BIG—WHALE SHARKS, MANTA RAYS AND SCHOOLS OF BLUESTRIPED GRUNTS

while driving on an unpaved road.

Buses can help you travel both within and between cities; taxis are also available to carry you between the downtown and beach areas in the larger cities. You can also rent bicycles, scooters or all-terrain vehicles by the day at several hotels in Los Cabos.

SHOPPING: Baja is a duty-free zone, so you'll find lots of shops selling electronic gear, perfumes, cosmetics, shoes and luxury imports for less than they'd cost on the Mexican mainland. Otherwise, the best bargains are probably regional arts and crafts, jewelry, leather goods and hand-woven tablecloths, rugs and other textiles. Negotiating prices is essential in the many open-air markets, but you're unlikely to get deals by haggling in boutiques and shops.

RESTAURANTS/NIGHTLIFE: Cabo San Lucas is Party Central—there's a get-down cantina or club on almost every street corner. Among the legendary "drink-till-you-drop" bars are the Giggling Marlin, Squid Roe, Carlos 'n' Charlie's and rock star Eddie Van Halen's Cabo Wabo, about two blocks off the main drag. But the town also has its share of good restaurants, including El Galeon (on a hillside looking over the town and harbor) and The Office (located on the beach—literally—over by the Hacienda Hotel). For authentic, fresh and tasty Mexican food, try Tacos Chidos on Zapata.

In San José del Cabo, the nightlife revolves mainly around the restaurants and large hotels, several of which sponsor Mexican fiestas and other weekly theme nights that include buffet, drinks and live music. For an elegant and romantic dinner, try Daniiana, in the Town Plaza; La Paloma (in the Hotel Palmilla) has a terrific Sunday brunch served in an airy, hacienda-style room overlooking the sea; and the town's one disco, Video Disco Cactus in the Stouffer Presidente Hotel, is open Tuesday through Sunday from 10 p.m. to 3 a.m.

In La Paz, La Cabana, Okey Laser and X-Tasis are the hot dance spots. For a good meal check out the Restaurant Bermejo in the Hotel Los Arcos and La Caleta Cafe right down the beach. Small streetside eateries with signs that say Birrieria specialize in roast cabrito, or baby goat, but there's also a New Age natural foods and bookstore called El Quinto Sol with an ample menu featuring exotic juices and vegetarian Mexican fare.

Loreto is pretty quiet except on weekends, when Cesár's Restaurant is the place to be on Saturday night when the local guitarists stroll around and sing with anyone who wants to join in. And in Mulegé, nightlife means finding out where the party is. More than likely, it's Hotel La Casita's Mexican Fiesta on Friday nights, the Hotel La Serenidad's Saturday Night Pig Roast and "Monday Night Football" at La Jungla Bambo. OTHER SPORTS: Sportfishing, surfing, windsurfing, parasailing, kayaking and whale-watching, as well as golf, tennis and horseback riding.

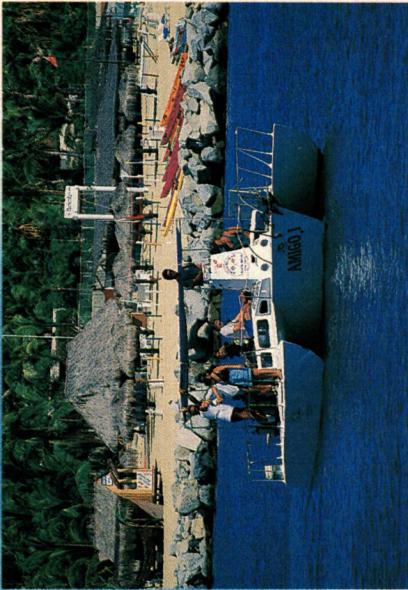
JUST IN CASE

Subaqueous Safety Services (SSS), the company that runs the chambers in Belize and Cozumel, has just built a state-of-the-art hyperbaric medical facility in Cabo San Lucas. In La Paz, Fernando Aguilar of Baja Diving Services has installed a recompression chamber in his new diving complex at Pichilingue Bay. There are currently no recompression facilities in Loreto or Mulegé. In case of an accident, be sure to contact the DAN Emergency Line at (919) 684-8111; DAN's general number is (919) 684-2948.

FOR FURTHER INFORMATION

Call (800) 44-MEXICO or contact the Mexican Government Tourism Office nearest you: Chicago, (312) 565-2786; Houston, (713) 880-5153; Los Angeles, (310) 203-8191; Montreal, (514) 871-1052; New York, (212) 755-7261; Toronto, (416) 925-0704; or Washington, D.C., (202) 728-1750.

Cabo San Lucas
San José del Cabo



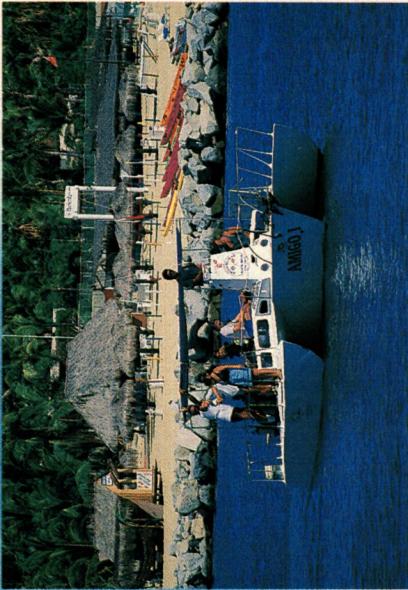
STEVE ESSI

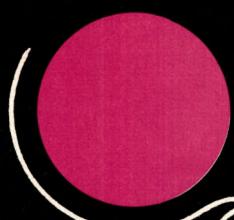


CLOCKWISE FROM ABOVE, A DIVE BOAT MOTORS OUT OF CABO BAY; THE GIGGLING MARLIN IN CABO SAN LUCAS IS A POPULAR AFTER-DIVE CANTINA; ALL ABOARD THE MANTA EXPRESS—ONE OF BAJA'S UNIQUE ENCOUNTERS WITH SEÑOR BIG.



TOM CAMPBELL

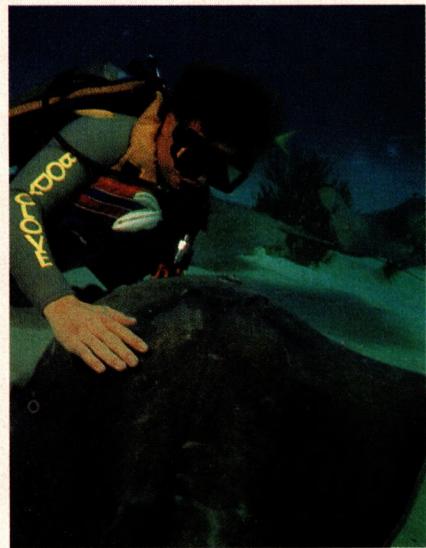




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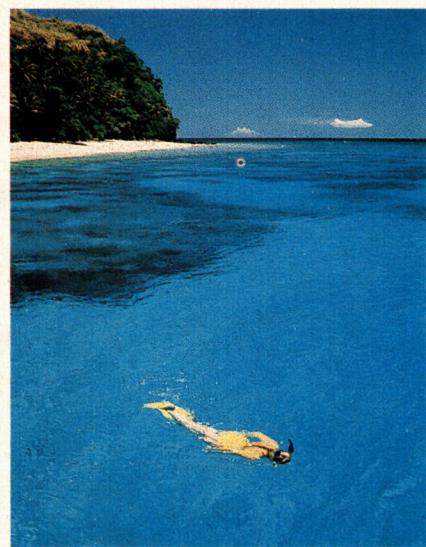
Sting
Ray City,
Cayman
Islands



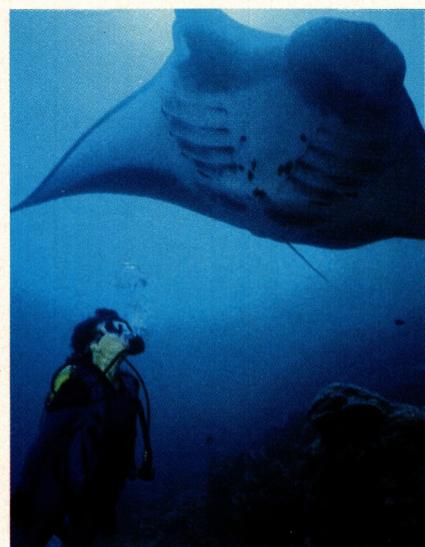
Cod Hole
Queensland,
Australia



Beqa
Lagoon,
Fiji



Manta
Ridge Yap,
Micronesia



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B A J A C A L I F O R N I A S U R

GENERAL

LOCATION: Baja California is an 876-mile-long peninsula running in a southeasterly direction from the southern border of California and ranging in width from 30 to 150 miles. The peninsula is divided into two politically distinct states—Baja California and Baja California Sur—and separated from the mainland of Mexico by the Golfo de California, more commonly known among divers as the Sea of Cortez.

TOPOGRAPHY: The Sea of Cortez side of Baja California Sur is indented with numerous coves and bays, and right offshore lie more than a dozen desert islands. Baja Sur is considered subtropical desert, arid yet subject to occasional heavy rainfall due to late-summer tropical storms. It's a land known for harsh climate and rugged terrain—to many mainland Mexicans it's considered Mexico's frontier country.

CURRENCY: The Mexican peso, currently exchanging at 3,000 to the U.S. dollar. Be aware, though, that Mexico is in the process of revamping its monetary system to eliminate those pesky zeroes. Consequently, the "new" pesos (called the Peso Azteca, but referred to often as "nuevo" pesos) currently in circulation differ from "old" pesos in that the last three zeroes have been eliminated—an "old" 10,000-peso note equals a "new" 10-peso note, which has its denomination in the bill's top right-hand corner reading "N10" rather than "10,000." Both old and new pesos are being accepted during the transition. Once this conversion is complete, money matters should be simplified—but in the meantime you can be easily confused if you're not paying attention. Note also that the dollar sign (\$) is often used to indicate pesos in Mexico, which can create further confusion. Traveler's checks are readily accepted nearly everywhere. You can charge some hotel and restaurant bills, as well as many store purchases, on VISA and MasterCard.

LANGUAGE: Spanish, although English is spoken widely in Cabo San Lucas. In La Paz and San José del Cabo, English is used on a more limited basis, most often in resort hotels and restaurants and businesses that cater to norteamericanos. In the countryside, bring along your Spanish-speaking skills, your phrase book or your translator.

DOCUMENTS: Carry your passport or birth certificate (or a certified copy) along with photo identification. You'll also need a Mexican Tourist Permit, available free of charge at the border, on your plane or at the airport when you arrive. Guard it carefully, since you can't leave the country without it and replacing it is a bureaucratic hassle that can take days or even a week.

ELECTRICITY: Electrical currents are the same in Baja California as in the U.S.: 100 volts, 60 cycles. If your appliances have three prongs you may want to bring an adapter, though, since most hotels have only two-prong outlets.

CLIMATE: Winter and spring are warm and sunny with cool evenings. Summer and fall are very hot, with occasional storms and balmy evenings.

AIR TEMPERATURES: From 65F in January to 95F in July along the southern Sea of Cortez.

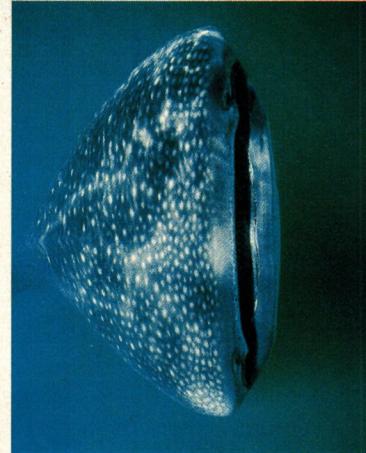
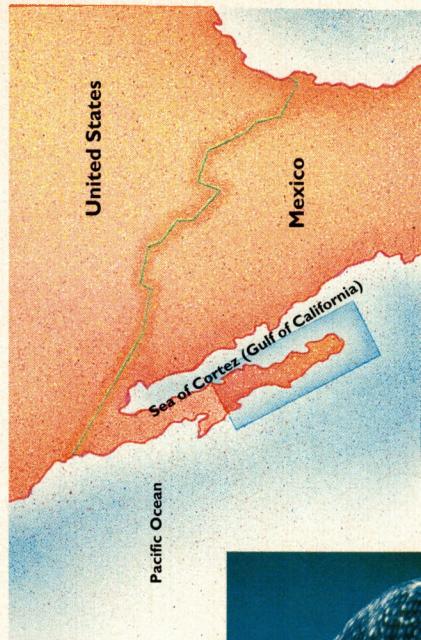
DIVING

DIVING SEASON: While it's possible to dive the southern Sea of Cortez year-round, from January through May water conditions tend to be cooler (as low as 65F), the plankton blooms and visibility comes and goes. The main diving season stretches from June to November, with prime time being August through November.

WATER TEMPERATURES/VISIBILITY: In June, July and August water temperatures range from 77F to 82F with visibility averaging 60 to 80 feet. In September, October and November water temperatures hover around 85F (up to 90F on the surface) and visibility usually runs 80 to 100 feet.

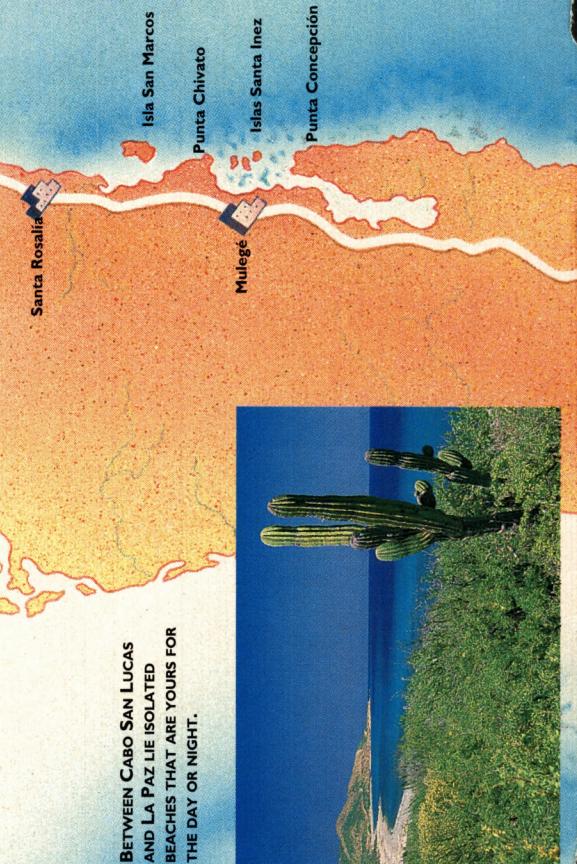
THERMAL PROTECTION: Quarter-inch wetsuits during the off-season; insulated dive skins to one-eighth-inch wetsuits during midsummer; a basic dive skin for protection from rocks and occasional drifting jellyfish in late summer/fall.

DIVING SKILLS: Although there are dive sites to tickle the fancies of everyone from brand-



YOU'D SMILE TOO IF YOU
WERE THE OCEAN'S
BIGGEST FISH.

MAPS BY KAREN MINOT



BETWEEN CABO SAN LUCAS
AND LA PAZ LIE ISOLATED
BEACHES THAT ARE YOURS FOR
THE DAY OR NIGHT.



STEVE ESSIG

**Siesta Central:
BAJA CALIFORNIA SUR RESORTS**

Siesta Central: BAJA CALIFORNIA SUR RESORTS									
HOTEL BUENA VISTA BEACH RESORT (on the East Cape, between San José del Cabo and La Paz) U.S. Reservations Office: (619) 711 Fast Whittier Blvd., Whittier, CA 90603 (800) 752-3555; fax: (310) 943-4078	✓	✓	✓	✓	✓	✓	✓	\$135	\$135
HOTEL FINISTERRE Bvd. Marina S/N, Domododilo Conocido, P.O. Box 1, Cabo San Lucas, BCS, Mexico 23410 011-52-114-3333; fax: 011-52-114-36590	✓	✓	✓	✓	✓	✓	\$75-\$110	\$85-\$120	\$105-\$140
HOTEL LOS ARCOS Av. Alvaro Obregón 408, La Paz, BCS, Mexico 23000 011-52-112-27744; fax: 011-52-112-54313 U.S. Reservations Office: 18552 Mac Arthur Blvd., Suite 205, Irvine, CA 92715	✓	✓	✓	✓	✓	✓	\$65	\$70	\$63
HOTEL MISION Bvd. Lopez Mateos 1, A.P. 39, Loreto, BCS, Mexico 011-52-113-500408; fax: 011-52-113-500448 U.S. Reservations Office: Fantasia Destinations, P.O. Box 79714, Houston, TX 77079; (800) 336-3483	✓	✓	✓	✓	✓	✓	\$57	\$62	\$73
HOTEL PRESIDENTE Bvd. Mijares S/N, San José del Cabo, BCS, Mexico 23400 011-52-114-202321; fax: 011-52-114-202332	✓	✓	✓	✓	✓	✓	\$120	\$140	\$170
HOTEL RANCHO LEONERO (on East Cape, between San José del Cabo and La Paz) U.S. Reservations Office: 8691 El Rancho, Fountain Valley, CA 92708 (800) 334-5494 (U.S. and Canada); (800) 696-2164 (CA); fax: (714) 375-3720	✓	✓	✓	✓	✓	✓	\$75-\$95	\$110-\$135	\$167.50
HOTEL SERENIDAD P.O. Box 9, Mulegé, BCS, Mexico 23900 011-52-115-30111; fax: 011-52-115-30311	✓	✓	✓	✓	✓	✓	\$45	\$49.50-\$52.50	\$56
HOTEL TWIN DOLPHIN P.O. Box 52, Cabo San Lucas, Mexico 23410 U.S. Reservations Office: 1625 W. Olympic Blvd., Suite 1005, Los Angeles, CA 90015 (800) 421-8925; fax: (213) 380-1302	✓	✓	✓	✓	✓	✓	\$235	\$260	\$145
LA CONCHA BEACH RESORT Km 5 Carrera a Pichilingue, P.O. Box 607, La Paz, BCS, Mexico 23000 011-52-112-26544; fax: 011-52-112-26218	✓	✓	✓	✓	✓	✓	\$85		\$70
MELIA CABO REAL Carretera Cabo San Lucas-San José del Cabo Km 19.5, San José del Cabo, BCS, Mexico 23410 011-52-114-30980; fax: 011-52-114-31003	✓	✓	✓	✓	✓	✓	\$147-\$195	\$157-\$205	\$192-\$240
PLAZA LAS GLORIAS CABO SAN LUCAS Bvd. Marina S/N, P.O. Box 287, Cabo San Lucas, BCS, Mexico 23410 011-52-114-31220; fax: 011-52-114-31238 U.S. Reservations Office: 350 N. Sam Houston Parkway E., Suite 280, Houston, TX 77060; (713) 448-2829	✓	✓	✓	✓	✓	✓	\$143 (standard) \$154 (studio)	\$176 (deluxe)	\$110 (studio)
PUEBLO BONITO RESORT Playa El Medano S/N, Cabo San Lucas, BCS, Mexico 23410 011-52-114-32900; fax: 011-52-114-31095	✓	✓	✓	✓	✓	✓	\$175 (jr. suite)	\$210 (lux. suite)	\$125 (jr. suite)
SUITES SOLMAR Av. San Lucas 1, P.O. Box 8, Cabo San Lucas, BCS, Mexico 23410 011-52-114-33535; fax: 011-52-114-30410 U.S. Reservations Office: P.O. Box 383, Pacific Palisades, CA 90272; (800) 344-3349	✓	✓	✓	✓	✓	✓	\$130	\$152	\$120

Choice Dive Deals in the Baja area

Primary Dive Areas	Specialties/ Services	Boats/ Divers	Morning Dive	Afternoon Dive	Snorkeling	Dive Plugs	Hotel Plugs	Certification	Gear Rental	Gear Repairs	Sales
Amigos Del Mar (Los Cabos) (800) 447-8999, 011-52-1-14-30505	Cabo San Lucas, Cabo Pulmo, Gordo Bank	adventure dives, night diving, custom tours	(2) 35-37'; 8-10 divers (2) 22-25'; 5-6 divers	2 dives/\$35-\$60 departs 9:30 am	1 dive/\$35 departs 2 pm	\$25	✓	✓	✓	✓	✓
Baja Diving & Service (La Paz) 011-52-1-12-1826, fax: 011-52-1-12-28644	Los Islotes, El Bajo, Salvatierra wreck	night & diving, diving/camping trips	(2) 45'; 18-25 divers (2) 31'; 12-15 divers (5) 22-26'; 3-7 divers	2-3 dives/\$70-\$77 departs 7:45 am	upon request/price varies	\$40	✓	✓	✓	✓	✓
Baja Expeditions (La Paz) (800) 843-6967, fax: (619) 581-6542	Sea of Cortez, La Paz, Socorro Island	shark diving, manta ray diving	30'; 16 divers	3 dives/\$95 departs 7 am		\$47.50	✓	✓			✓
Cabo Acuadeportes (Los Cabos) (800) 441-1683, 011-52-1-14-30117 (phone & fax)	Chileno Ref, Cabo Pulmo, Gordo Bank	on-site beach diving, multilingual services	(3) 24'; 6-16 divers 20'; 10 divers	2 dives/\$35-\$60 departs 8 & 9:30 am	2 dives/\$35-\$60 departs 1 & 3 pm	\$10	✓	✓	✓	✓	✓
Dive Adventures (Los Cabos) 011-52-1-14-32630 (phone & fax)	Cabo Pulmo, Gordo Bank, Chileno Ref	night diving, handicapped divers, program, video processing	25'; 8 divers 23'; 8 divers	1 or 2 dives/\$35-\$65 departs 9:30 am	1 dive/\$35 departs 2 pm	\$25	✓	✓	✓	✓	✓
Dive Palmilla (Los Cabos) (800) 637-2226, 011-52-1-14-21707	Cabo Pulmo, Gordo Banks, Cabo San Lucas	night & diving, personalized tours, English-speaking guides	(2) 28'; 4 divers (2) 21'; 4 divers	1 or 2 dives/\$45-\$125 departure time varies	upon request/price varies	\$25	✓	✓	✓	✓	✓
East Cape Divers (East Cape) (714) 375-3720 (phone & fax)	Cabo Pulmo, Punta Pescadero	small groups, personalized services	22'; 3 divers	2 dives/\$75 departs 8 am	1 dive/price varies departs 1 pm	free	✓	✓			
Fantasia Divers (Loreto) (800) 336-34483, fax: (713) 538-9587	Isla Coronado, Isla Danzante, Isla del Carmen	personalized services, resort course	(4) 24'; 4 divers	2 dives/\$66 departs 8 am		\$45	✓	✓	✓	✓	✓
Mulege Divers (Mulege) 011-52-115-30059	Punta Concepción, Punta Chirivato, Santa Inez Islands	personalized services, small groups, resort course	22-4' divers	2 dives/\$30-\$60 departs 8 am		\$20-\$30	✓	✓	✓	✓	✓
Pacific Coast Adventures (Los Cabos) (800) 491-3483, fax: (310) 451-4778	Cabo Pulmo, Gordo Bank, Shipwrecks	custom packages, diving with whales, special snorkeling trips	32'; 20 divers 24'; 5 divers 22'; 6 divers	1-3 dives/\$35-\$85 departs 9:30 & 11:30 am departs 1:30 pm	1 or 2 dives/\$35-\$60 departs 9:30 & 11:30 am departs 1:30 pm	\$20	✓	✓	✓	✓	✓
Sol Sports (East Cape)	Cabo Pulmo, El Cardinal, Punta Pescadero	custom trips, small groups, personalized services	22'; 6 divers	2 dives/\$75-\$100 departs 7 am	upon request/price varies	\$40	✓	✓	✓	✓	✓
Baja Diving & Service (Isla de la Paz) 011-52-1-12-1826, fax: 011-52-1-12-28644	Cabo Pulmo, Sea of Cortez	custom trips, small groups, personalized services	90'; 14 divers (7 cabins)	dive all day	call for prices	free	✓	✓	✓	✓	✓
Baja Expeditions (Copper Sky & Don Jose) (800) 843-6967, fax: (619) 581-6542	Sea of Cortez, La Paz, Socorro Island	shark diving, manta ray diving	88'; 12 divers (6 cabins) 80'; 16 divers (7 cabins)	dive all day	6 days/\$1,495 112'; 24 divers (12 cabins)	free	✓	✓	✓	✓	✓
Cabo Resort Operations (Sotmar V) (800) 344-3349, (310) 459-9861, fax: (310) 454-1686	Cabo Pulmo, Isla Carrallo, Socorro Island	shark diving, wreck diving, special dive sites		dive all day	4-8 days/\$995-\$1,250	free	✓	✓	✓	✓	✓

from the U.S. mainland. But I've been here for a week, diving and eating my way along the 1,000-mile length of Baja. Clinging to an anchor line above a seamount known as El Bajo and watching Señor Big is simply payoff for lessons learned as I've settled into the rhythms of his world. Lesson one: Leave behind the American frenzy to see it, do it, photograph it and hurry home with shots to prove that, yeah, I've been there, done that.

Señor Big ain't that easy.

LOS CABOS BOUND

My journey began on Mexico's Highway 1, a dusty, desolate road that rambles the begrudging length of the Baja peninsula. You get on at Tijuana and get off in another world. In between lies rugged desert, thickets of cardon cactus, thorny joshua trees, and scraggly ocotillo bushes that have taken root in the place

STEVE ESSIG

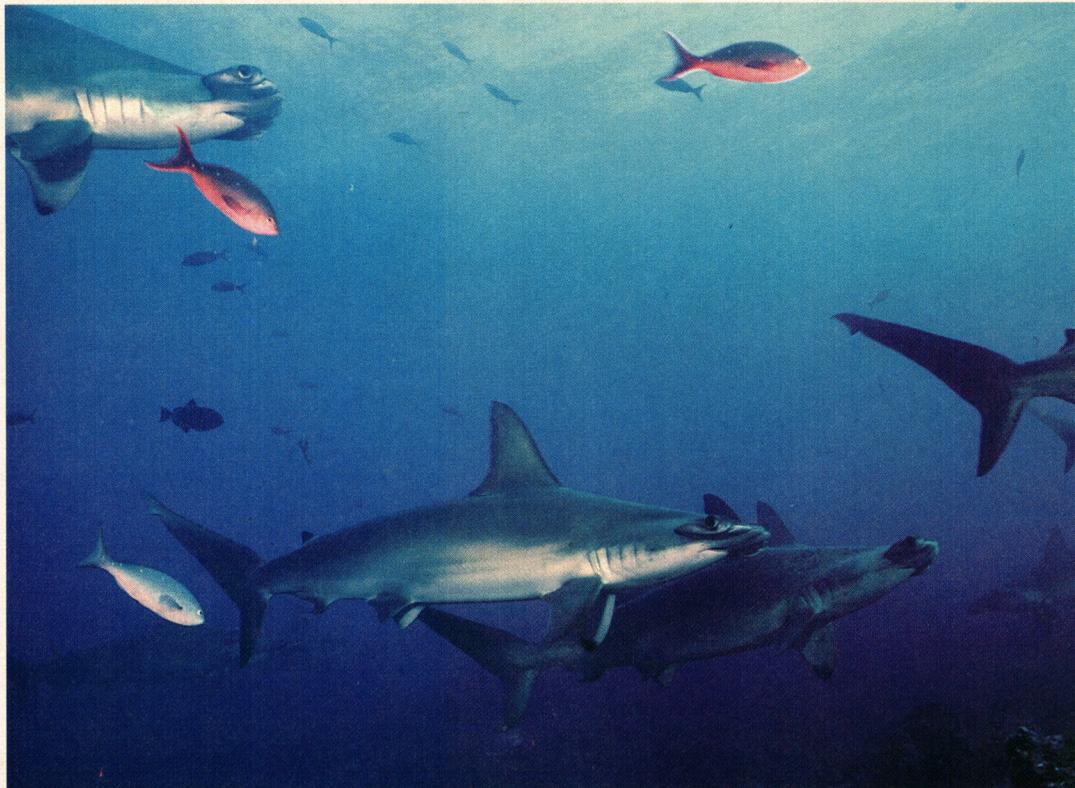


where volcanoes once ruled.

TAKE YOUR PICK: A BUBBLY LOS CABOS RESORT HOTEL POOL OR THE BLUE DEPTHS IN THE SEA OF CORTEZ—ONE OF THE WORLD'S DEEPEST GULFS.

From the Pacific on one side and the Sea of Cortez on the other, the landscape rises up from white sand beaches, electric blue seas, palm trees and perfect turquoise lagoons to form the craggy spine of the Mexican Sierras. The mountains put on one of nature's best light shows, shading from morning's burnt gold to evening's pigeon-blood red as the sun treks across this narrow slip of land that was part of mainland Mexico until ripped away 25 million years ago by the same Pacific tectonic plate that created the San Andreas Fault—another Sea of Cortez in the making.

The road ends in Los Cabos, or "The



And how can those photographic opportunities compare to the thrill of swimming with a finback whale, watching a dozen striped marlin devour a twisting ball of baitfish, or playing in the middle of a herd of sea lion pups?

Among the old salts, the Sea of Cortez has a well-deserved reputation as one of those special places where you can expect to encounter many of the superstars of the sea, animals collectively referred to as "Mr. Big." Although the reefs teem with a wonderful diversity of smaller creatures, it's the chance to film Señor Big that makes the Sea of Cortez such an alluring destination for underwater photographers. Of course, there are no guarantees. But experience has taught me that my chances to shoot Señor Big are substantially better here than anywhere else.

Perhaps the only exception to the "no guarantees" rule is the chance to observe and film sea lions at several rookeries, especially in late summer and early fall, when your main problem will be how to back up far enough to get an interesting frame, not the other way around.

You can also increase your odds of getting those magic images of Señor Big by knowing when to dive. With a few exceptions, the best time for a photographer to dive the Cortez is late summer and early fall, when visibility is usually in the 100-foot range. During winter and spring the water turns green and vis can

SHOOTING SEÑOR BIG

BY MARTY SNYDERMAN

Hammerhead sharks everywhere. Over a hundred of them, most eight to 12 feet long. If this had been my first dive, panic would've probably made it my last. But years of experience told me that the menacing-looking creatures circling me meant not danger, but another unique photographic opportunity in Mexico's Sea of Cortez.

Unfortunately I was already at 120 feet, a depth that left me little light or time to work. I also knew that as soon as I exhaled, the entire school of scalloped hammerheads would disappear. I clicked off a half-dozen frames before breathing again. Suddenly, after being surrounded by more sharks than I could count, there wasn't a single one in sight.

And that's how it happens in the Sea of Cortez, where I've had the chance to film the face of a whale shark, the wings of a manta ray and a pod of wild dolphins as they raced in to take a look at me only moments after I'd been engulfed by an enormous school of tuna.

Capes," the collective term for two resort towns, 22 miles apart, perched on the southernmost tip of Baja. San José del Cabo is the more sedate of the two. Like Cozumel's San Miguel, it's still a sleeping fishing village at heart, with squat pastel buildings lining the main *bulevar*, complete with a shaded town square and bandstand for weekend fiestas. If you crave Cancún-style glitz, head west to Cabo San Lucas, Baja's party capital that moves to a disco beat, where swanky hotels and shiny condos dot the steep hills that tumble into a pic-

turesque bay. Here's where the underwater glitz begins.

Inside Cabo San Lucas Bay, novice and intermediate divers can tune up among shallow reefs and pinnacles jutting from a sandy bottom that begins in 20 feet of calm water and visibility that ranges from 100 to a lowly 40 feet, if the plankton is blooming. Either beach diving or boat diving in the bay will put you among rumpled ledges of soft corals lit by pillars of sun and swarming with reef fish.

For deeper dives, motor out to El

Arco at Land's End, where rock pinnacles and a natural arch mark the spot where the Sea of Cortez pours into the Pacific. On the 30-foot shallow side of Anegada Pinnacle, schools of cornetfish and jacks shelter from the current among scarlet sea fans. But swim to the other side and you'll suddenly find yourself above a 2,000-foot trench called Submarine Canyon. Keep an eye out for Señor Big—in this case, gray whales and mantas—but also watch out for the sea lions that like to sneak up from behind. At a site

drop to 15 feet or less. But even in the summer, this gulf is well-known for fast-changing conditions; you must keep a close eye on weather and sea conditions.

As always, lens selection is critical. I use the 15mm only if the subject is as large as a whale shark, or if I'm convinced that I can get as close to the subject as I wish, regardless of its size. When photographing sea lions, manta rays, billfish, turtles, dolphins and other animals not "whale shark big," I often select a Nikonos with a 20mm lens, instead of the 15mm. Why? When the adrenaline's flowing, it's easy to think you're right on top of your subject. Then you get the pictures back and the subjects are too small to make exciting images. A 20mm lens will help you fill more of the frame with your subject than a 15mm might.

Regarding film, I prefer to shoot Kodachrome 64 when I can, but because water conditions in the Cortez are so unpredictable, I always pack rolls of 100 ASA film as well. Some professionals prefer Fujichrome or Ektachrome stock because of the added film speed, and because the water will appear a bit more blue than with Kodachrome. Remember: To capture sharp images when photographing big, fast animals, use the fastest shutter speed you can get away with. A faster film will enable you to use a faster shutter speed in most situations.

Keep in mind that photographic supplies such as film and batteries can be difficult to get in Baja and on the Mexican mainland. Stock up on everything you might need. It's best to be totally self-contained before crossing the border, especially if you're planning one of the available wilderness experiences. Even where electricity (usually 110 volts) is available, many towns do not run their generators 24 hours a day.

In other words, to film Señor Big, you have to be prepared.

TOP PHOTO BY TOM CAMPBELL; BOTTOM, STEVE ESSIG

named Sand Falls you can watch the bay's sand spilling down canyons carved into a granite wall that tumbles to eternity, producing a waterfall effect that once intrigued Jacques Cousteau.

HIT THE ROAD, JACKS

For a full day of diving, eating and sightseeing that takes you deep into Baja, sign up in Los Cabos for one of the scheduled trips to Cabo Pulmo, a two-hour jaunt that ends at a remote



ABOVE, PLAYFUL SEA LION NIPS AT DIVER. BELOW, THE BEACH AT PLAYA EL CHILENO.

beach easily mistaken for paradise. Just offshore is one of the only true coral reefs on the western coast of North America, Pulmo Reef, protected by Cabo Pulmo Bay from the cold upwellings that prohibit the growth of

hard corals elsewhere in the Sea of Cortez.

Pulmo's nine primo dive sites can only be described as seriously overcrowded with schools of fish not usually found (*Continued on page 99*)

AND THE SURVEY

We asked for it. And boy, did we get it. Our October issue carried a ballot asking you to vote for your favorites. More than 22,000 individual votes were cast, lauding operators and destinations from the well-known to the

barely-heard-of. While your tastes and preferences may not match those of your fellow readers, here's what you had to say about the people and places you rely on to supply your fun.

You're anything but shy when it comes to opinions about resorts and operators, where to dive and where to unwind with an *après scuba spritzer*.

Favorite Resort or Operator

UNITED STATES

- 1ST PLACE ► Quiescence Diving Service, Key Largo, FL
 - Lady Cyana Divers, Islamorada, FL
 - 2ND PLACE ► Atlantis Dive Center, Key Largo, FL
 - 3RD PLACE ► Olympus Dive Center, Morehead City, NC
 - Truth Aquatics Inc., Santa Barbara, CA
- CARIBBEAN**
- 1ST PLACE ► Anthony's Key Resort, Roatan, Honduras
 - 2ND PLACE ► Sand Dollar Condominiums and Beach Club, Bonaire
 - 3RD PLACE ► Bruce Bowker's Carib Inn, Bonaire
 - 4TH PLACE ► Dive Paradise, Cozumel
 - 5TH PLACE ► Flamingo Beach Hotel, Bonaire
► Galapago Inn, Cozumel
- PACIFIC**
- 1ST PLACE ► Palau Pacific Resort, Palau
 - 2ND PLACE ► Matagi Island Resort, Taveuni, Fiji
 - 3RD PLACE ► Borneo Divers & Sea Sports, Sabah, Malaysia
 - 4TH PLACE ► Dive Taveuni Resort, Taveuni, Fiji
 - 5TH PLACE ► Cook Island Divers, Rarotonga, French Polynesia
► Fish 'n Fins, Palau

Favorite Wreck Dive

UNITED STATES

- 1ST PLACE ► *Duane*, Key Largo, FL
- 2ND PLACE ► *Eagle*, Islamorada, FL
- 3RD PLACE ► *Mercedes*, Fort Lauderdale, FL
- 4TH PLACE ► *Thunderbolt*, Marathon, FL
- 5TH PLACE ► *U-352*, Cape Lookout, NC
► *Mahi*, Oahu, HI

CARIBBEAN

- 1ST PLACE ► *Rhone*, British Virgin Islands
- 2ND PLACE ► *Hilma Hooker*, Bonaire
- 3RD PLACE ► *Oro Verde*, Grand Cayman
- 4TH PLACE ► *Antilla*, Aruba
- 5TH PLACE ► *Jado Trader*, Honduras
► *Balboa*, Grand Cayman

PACIFIC

- 1ST PLACE ► *Shinkoku Maru*, Chuuk
- 2ND PLACE ► *S.S. Yongala*, Australia

Favorite Reef Dive

UNITED STATES

- 1ST PLACE ► Looe Key Reef, Looe Key, FL
- 2ND PLACE ► Molasses Reef, Key Largo, FL
- 3RD PLACE ► Flower Garden Banks, TX
- 4TH PLACE ► French Reef, Key Largo, FL
- 5TH PLACE ► Double Ledges, West Palm Beach, FL

CARIBBEAN

- 1ST PLACE ► Palancar Caves, Cozumel
- 2ND PLACE ► Bloody Bay Wall, Little Cayman
- 3RD PLACE ► Karpata, Bonaire
- 4TH PLACE ► Stake Bay, Cayman Brac
- 5TH PLACE ► Punta Sur, Cozumel
► Santa Rosa, Cozumel

PACIFIC

- 1ST PLACE ► Blue Corner, Palau
- 2ND PLACE ► Beqa Lagoon, Suva, Fiji
- 3RD PLACE ► Big Drop-off, Palau
- 4TH PLACE ► Ribbon Reefs, Australia
- 5TH PLACE ► Tunnel Beach, Kauai, HI

Favorite Wall Dive

UNITED STATES

- 1ST PLACE ► Molokini Crater, HI
- 2ND PLACE ► Half-Way Rock, Cape Ann, MA
- 3RD PLACE ► Conch Reef, Tavernier, FL

CARIBBEAN

- 1ST PLACE ► Bloody Bay Wall, Little Cayman
- 2ND PLACE ► Santa Rosa, Cozumel
- 3RD PLACE ► Tarpon Alley, North Wall, Grand Cayman
- 4TH PLACE ► Grand Canyon, North Wall, Grand Cayman
- 5TH PLACE ► Palancar Horseshoe, Cozumel

PACIFIC

- 1ST PLACE ► Blue Corner, Palau
- 2ND PLACE ► Great White Wall, Taveuni, Fiji
- 3RD PLACE ► Ngemelis, Palau
- 4TH PLACE ► New Drop-off, Palau
- 5TH PLACE ► Blue Hole, Palau
► Sipadan, Borneo

Favorite Night Dive

UNITED STATES

- 1ST PLACE ► Looe Key Reef, FL
- 2ND PLACE ► Manta Ray City, Kona, HI
- 3RD PLACE ► North Breakers Reef, West Palm Beach, FL
- 4TH PLACE ► Alligator Reef, Islamorada, FL
► Molasses Reef, Key Largo, FL
► Edmonds Underwater Park, Edmonds, WA

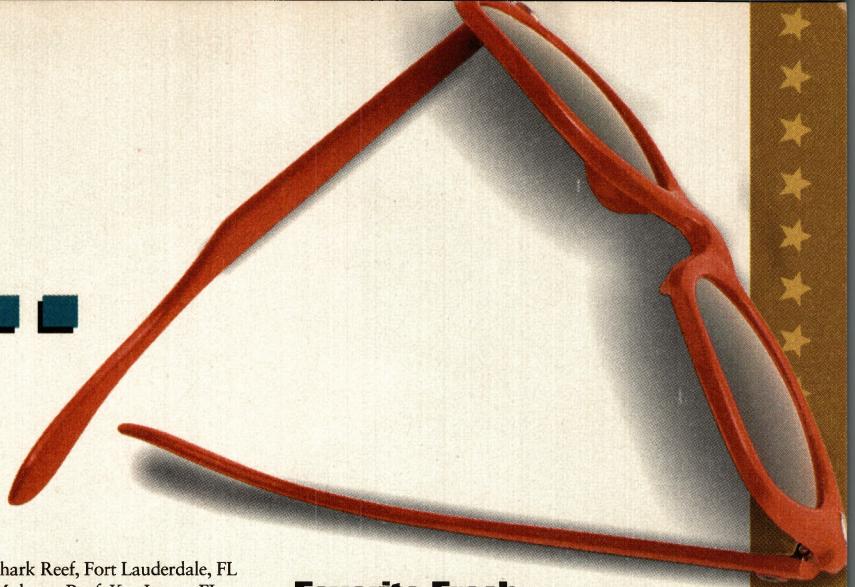
CARIBBEAN

- 1ST PLACE ► Town Pier, Bonaire
- 2ND PLACE ► *Rhone*, British Virgin Islands
- 3RD PLACE ► La Ceiba wreck, Cozumel
- 4TH PLACE ► Chankanaab Lagoon, Cozumel
- 5TH PLACE ► Palancar Shallow, Cozumel

PACIFIC

- 1ST PLACE ► *Fujikawa Maru*, Chuuk
- 2ND PLACE ► *Shinkoku Maru*, Chuuk
- 3RD PLACE ► Sipadan, Borneo
- 4TH PLACE ► *S.S. Yongala*, Australia

Y SAYS...



Live-aboard With Best Food

- 1ST PLACE ► *Sea Dancer*, Turks & Caicos
- 2ND PLACE ► *Wave Dancer*, Belize
- 3RD PLACE ► *Cayman Aggressor*, Cayman
- 4TH PLACE ► *Spoilsport*, Australia
- 5TH PLACE ► *Kona Aggressor II*, HI

Favorite Drift Dive

UNITED STATES

- 1ST PLACE ► West Palm Beach, FL
- 2ND PLACE ► The Breakers, West Palm Beach, FL
- 3RD PLACE ► Paul's Reef, West Palm Beach, FL

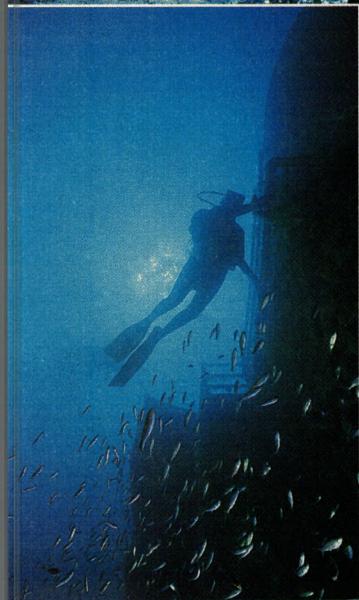
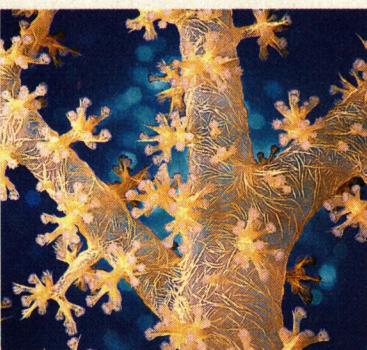
- 4TH PLACE ► Shark Reef, Fort Lauderdale, FL
- 5TH PLACE ► Molasses Reef, Key Largo, FL

CARIBBEAN

- 1ST PLACE ► Cozumel
- 2ND PLACE ► Palancar, Cozumel
- 3RD PLACE ► Santa Rosa, Cozumel
- 4TH PLACE ► Columbia, Cozumel
- 5TH PLACE ► Cedral Wall, Cozumel

PACIFIC

- 1ST PLACE ► Blue Corner, Palau
- 2ND PLACE ► Mapia Channel, Mapia
- 3RD PLACE ► Dirty Rock, Cocos Island
- Great White Wall, Fiji
- Taveuni, Fiji



GINNIE SPRINGS, FLA., TOPPED THE LIST OF U.S. FRESHWATER DIVES (TOP LEFT); BLOSSOMS OF YELLOW CORAL HELPED MAKE FUJIKAWA MARU, TRUK LAGOON, THE TOP PACIFIC NIGHT DIVE (TOP RIGHT); KEY LARGO'S DUANE RANKED AS YOUR FAVORITE WRECK IN U.S. WATERS (ABOVE LEFT); MOLOKINI CRATER IN MAUI, HAWAII, CLAIMED TOP SPOT AMONG U.S. WALL DIVES (ABOVE RIGHT).

Favorite Fresh-water Dive

UNITED STATES

- 1ST PLACE ► Ginnie Springs, FL
- 2ND PLACE ► Crystal River, FL
- 3RD PLACE ► Lake Tahoe, CA-NV
- 4TH PLACE ► Lake Travis, TX
- 5TH PLACE ► Lake Mead, AZ-NV

CARIBBEAN

- 1ST PLACE ► Carwash, Cancún
- 2ND PLACE ► Akumal, Mexico
- 3RD PLACE ► Yucatán, Mexico

PACIFIC

- 1ST PLACE ► Jellyfish Lake, Palau

OTHER

- 1ST PLACE ► Tobermory, Canada

Favorite Live-aboard

UNITED STATES

- 1ST PLACE ► Vision, CA
- 2ND PLACE ► Bottom Time II, FL
- 3RD PLACE ► Truth, CA
- 4TH PLACE ► Eagle's Nest, FL
- 5TH PLACE ► Dream Too, FL

CARIBBEAN

- 1ST PLACE ► Wave Dancer, Belize
- 2ND PLACE ► Sea Dancer, Turks & Caicos
- 3RD PLACE ► Belize Aggressor, Belize
- 4TH PLACE ► Cuan Law, British Virgin Islands
- 5TH PLACE ► Little Cayman Diver II, Cayman Islands

PACIFIC

- 1ST PLACE ► Kona Aggressor II, HI
- 2ND PLACE ► Supersport, Australia
- 3RD PLACE ► Spoilsport, Australia
- 4TH PLACE ► Tropical Princess, Indonesia
- 5TH PLACE ► Truk Aggressor, Chuuk
- Bilikiki, Solomon Islands

Favorite Travel Specialist

- 1ST PLACE ► Tropical Adventures Travel
- 2ND PLACE ► Sea Safaris Travel Inc.
- 3RD PLACE ► See & Sea
- 4TH PLACE ► Caradonna Caribbean Tours
- 5TH PLACE ► PADI Travel Network

Favorite Dive Retailer

- 1ST PLACE ► Sport Chalet Divers, CA
- 2ND PLACE ► Force-E, FL
- 3RD PLACE ► Diver's Outlet, FL
- 4TH PLACE ► Dive 'N Surf, CA
- 5TH PLACE ► A-1 Scuba Center, CO

Favorite Family Dive Trip

UNITED STATES

- 1ST PLACE ► Key Largo, FL
- 2ND PLACE ► Kona Coast, HI
- 3RD PLACE ► Key West, FL
- 4TH PLACE ► Panama City, FL

JOE BYRD PHOTOGRAPHY

TAMMY PELUSO/TOM STACK ASSOC.

READERS' CHOICE AWARDS

MARK LAWRENCE

SANTA ROSA WALL, COZUMEL—ONE OF YOUR FAVORITE CARIBBEAN DRIFT DIVES.

5TH PLACE ► Destin, FL

CARIBBEAN

1ST PLACE ► Grand Cayman

2ND PLACE ► Cozumel

3RD PLACE ► Bonaire

4TH PLACE ► Bahamas

PACIFIC

1ST PLACE ► Palau

2ND PLACE ► Australia

Most Environmentally Sensitive Destination**UNITED STATES**

1ST PLACE ► The Florida Keys

2ND PLACE ► Key Largo, FL

3RD PLACE ► John Pennekamp State Park, FL

4TH PLACE ► Hawaii

5TH PLACE ► Looe Key, FL

CARIBBEAN

1ST PLACE ► Bonaire

2ND PLACE ► Cozumel

3RD PLACE ► The Cayman Islands

4TH PLACE ► Belize

5TH PLACE ► Roatan, Honduras

PACIFIC

1ST PLACE ► Great Barrier Reef, Australia

2ND PLACE ► Chuuk, Micronesia

3RD PLACE ► Heron Island, Australia

4TH PLACE ► Palau

5TH PLACE ► Yap, Micronesia

Best Place To See Big Animals**UNITED STATES**

1ST PLACE ► Crystal River, FL

2ND PLACE ► Flower Gardens, TX

3RD PLACE ► Channel Islands, CA

4TH PLACE ► West Palm Beach, FL

5TH PLACE ► The Florida Keys

CARIBBEAN

1ST PLACE ► Cozumel

2ND PLACE ► Grand Cayman

3RD PLACE ► Turks & Caicos

4TH PLACE ► Roatan, Honduras

5TH PLACE ► Bahamas

PACIFIC

1ST PLACE ► Blue Corner,

Palau

2ND PLACE ► Great

Barrier Reef, Australia

3RD PLACE ►

Galapagos Islands,

Ecuador

4TH PLACE ► Sea of Cortez, Baja, Mexico

5TH PLACE ► Cocos Island, Costa Rica

Most Environmentally Sensitive Resort or Live-aboard**UNITED STATES**

1ST PLACE ► Ocean Divers, Key Largo, FL

2ND PLACE ► Atlantis Dive Center, Key Largo, FL

CARIBBEAN

1ST PLACE ► Anthony's Key Resort, Roatan, Honduras

2ND PLACE ► Sand Dollar Condominiums and Beach Club, Bonaire

3RD PLACE ► Captain Don's Habitat, Bonaire

4TH PLACE ► CoCo View Resort, Roatan, Honduras

5TH PLACE ► Belize Aggressor, Belize

► Sunset House, Grand Cayman

► Flamingo Beach Hotel, Bonaire

► Sea Dancer, Turks & Caicos

► Bruce Bowker's Carib Inn, Bonaire

PACIFIC

1ST PLACE ► Spoilsport, Australia

2ND PLACE ► Lammer Law, Ecuador

3RD PLACE ► Borneo Divers & Sea Sports, Sabah, Malaysia

4TH PLACE ► Heron Island Resort, Australia

5TH PLACE ► Supersport, Australia

Most Convenient Diving**UNITED STATES**

1ST PLACE ► The Florida Keys

2ND PLACE ► Lady Cyana, FL

3RD PLACE ► Quiescence, FL

4TH PLACE ► Channel Islands, CA

5TH PLACE ► Atlantis Dive Center, Key Largo, FL

CARIBBEAN

1ST PLACE ► Cozumel

2ND PLACE ► Peter Hughes' Dive Bonaire (Flamingo Beach Hotel), Bonaire

3RD PLACE ► Bonaire

► CoCo View, Roatan, Honduras

4TH PLACE ► Anthony's Key Resort, Roatan, Honduras

5TH PLACE ► Captain Don's Habitat, Bonaire

PACIFIC

1ST PLACE ► Sipadan, Borneo

2ND PLACE ► Heron Island, Australia

3RD PLACE ► Aggressor Fleet

4TH PLACE ► Matagi Island, Fiji

Favorite Photographic Site**UNITED STATES**

1ST PLACE ► The Florida Keys

2ND PLACE ► Looe Key, FL

3RD PLACE ► Key Largo, FL

4TH PLACE ► Channel Islands, CA

5TH PLACE ► Key West, FL

CARIBBEAN

1ST PLACE ► Cozumel

2ND PLACE ► Bonaire

3RD PLACE ► Grand Cayman

4TH PLACE ► Belize

► Bloody Bay Wall, Little Cayman

5TH PLACE ► Bay Islands, Honduras

PACIFIC

1ST PLACE ► Palau

2ND PLACE ► Great Barrier

Reef, Australia

3RD PLACE ► Truk

Lagoon, Chuuk

4TH PLACE ► Fiji

5TH PLACE ► Galapagos

Islands, Ecuador

► Bunaken, Manado,

Indonesia

Favorite Advanced Dive Destination

UNITED STATES

- 1ST PLACE ► Duane, Key Largo, FL
- 2ND PLACE ► West Palm Beach, FL
- 3RD PLACE ► The Florida Keys
- 4TH PLACE ► Molokini, HI
- 5TH PLACE ► Cape Hatteras, NC
- Flower Garden Banks, TX

CARIBBEAN

- 1ST PLACE ► Punta Sur, Cozumel
- 2ND PLACE ► North Wall, Grand Cayman
- 3RD PLACE ► Belize
- 4TH PLACE ► Bloody Bay Wall, Little Cayman
- 5TH PLACE ► Saba

PACIFIC

- 1ST PLACE ► Palau
- 2ND PLACE ► Truk Lagoon, Chuuk
- 3RD PLACE ► Great Barrier Reef, Australia
- 4TH PLACE ► Galapagos Islands, Ecuador
- 5TH PLACE ► Cocos Island, Costa Rica

Favorite Place To Snorkel

UNITED STATES

- 1ST PLACE ► John Pennekamp State Park, Key Largo, FL
- 2ND PLACE ► The Florida Keys
- 3RD PLACE ► Maui, HI
- 4TH PLACE ► Hanauma Bay, HI
- 5TH PLACE ► Kauai, HI
- Looe Key, FL

CARIBBEAN

- 1ST PLACE ► Bonaire
- 2ND PLACE ► Cozumel
- 3RD PLACE ► Grand Cayman
- 4TH PLACE ► St. John, USVI
- 5TH PLACE ► Chankanaab Lagoon, Cozumel

PACIFIC

- 1ST PLACE ► Great Barrier Reef, Australia
- 2ND PLACE ► Palau
- 3RD PLACE ► Heron Island, Australia
- 4TH PLACE ► Moorea, Tahiti
- 5TH PLACE ► Jellyfish Lake, Palau

Favorite Beginner's Dive Destination

UNITED STATES

- 1ST PLACE ► The Florida Keys
- 2ND PLACE ► John Pennekamp State Park, Key Largo, FL
- 3RD PLACE ► Catalina Island, CA
- 4TH PLACE ► Monterey Bay, CA
- 5TH PLACE ► Kona Coast, HI

CARIBBEAN

- 1ST PLACE ► Bonaire
- 2ND PLACE ► Grand Cayman
- 3RD PLACE ► Cozumel
- 4TH PLACE ► Cancún
- 5TH PLACE ► Stingray City, Grand Cayman

Favorite Shore Dive

UNITED STATES

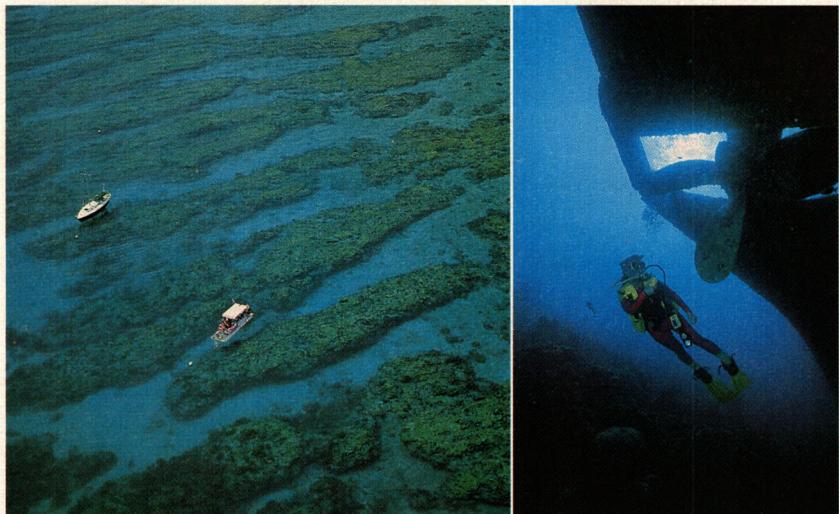
- 1ST PLACE ► Monterey Bay, CA
- 2ND PLACE ► Kona Coast, HI
- 3RD PLACE ► Panama City, FL
- 4TH PLACE ► Black Rock, HI
- 5TH PLACE ► La Jolla, CA

CARIBBEAN

- 1ST PLACE ► Bonaire
- 2ND PLACE ► Cozumel
- 3RD PLACE ► Eden Rock, Grand Cayman
- 4TH PLACE ► CoCo View, Roatan, Honduras
- 5TH PLACE ► La Ceiba, Cozumel

Favorite Day Boat

- 1ST PLACE ► Encore, Los Angeles, CA
- 2ND PLACE ► Lois Ann, San Diego, CA
- 3RD PLACE ► Diver Two, Kona Coast Divers, HI
- 4TH PLACE ► Rampage, West Palm Beach, FL



LOOE KEY REEF, FLORIDA KEYS (TOP LEFT), RANKED AS THE TOP U.S. REEF DIVE. THE HILMA HOOKER (TOP RIGHT) IN BONAIRE AND HMS RHONE (ABOVE LEFT) IN THE BRITISH VIRGIN ISLANDS SNAGGED TOP CARIBBEAN WRECK DIVE HONORS; MOLASSES REEF IN KEY LARGO'S JOHN PENNEKAMP STATE PARK (ABOVE RIGHT) WAS A WINNER IN SEVERAL CATEGORIES.



Best Cheesburgers

- 1ST PLACE ► Jimmy Buffett, Key West, FL
- 2ND PLACE ► In-N-Out, Mission Viejo, CA
- 3RD PLACE ► Fuddrucker's, Fort Walton Beach, FL
- 4TH PLACE ► Hamburger Mary's, Lahaina, Maui, HI
- 5TH PLACE ► Cheeseburger in Paradise, Maui, HI

Favorite After-Dive Bar

CARIBBEAN

- 1ST PLACE ► Carlos 'n' Charlie's, Cozumel
- 2ND PLACE ► Sunset House, Grand Cayman
- 3RD PLACE ► End of the World Tavern, Cozumel
- 4TH PLACE ► La Ceiba Hotel, Cozumel
- 5TH PLACE ► Riding Rock Inn, San Salvador, Bahamas

Favorite Beer

UNITED STATES

- 1ST PLACE ► Budweiser
- 2ND PLACE ► Coors
- 3RD PLACE ► Miller Lite
- 4TH PLACE ► Samuel Adams
- 5TH PLACE ► Anchor Steam

CARIBBEAN

- 1ST PLACE ► Red Stripe, Jamaica
- 2ND PLACE ► Corona, Mexico
- 2ND PLACE ► Dos Equis, Mexico
- 3RD PLACE ► Kalik, Bahamas
- 4TH PLACE ► Belikin, Belize

PACIFIC

- 1ST PLACE ► Foster's, Australia
- 2ND PLACE ► Hinanor, Tahiti
- 3RD PLACE ► Fiji Bitter, Fiji
- 4TH PLACE ► Singha, Thailand
- 5TH PLACE ► San Miguel, Philippines

Best Topside Attractions

UNITED STATES

- 1ST PLACE ► Key West, FL
- 2ND PLACE ► The Florida Keys
- 3RD PLACE ► Hawaii
- 4TH PLACE ► Maui, HI
- 5TH PLACE ► Key Largo, FL

CARIBBEAN

- 1ST PLACE ► Cozumel
- 2ND PLACE ► Grand Cayman
- 3RD PLACE ► Nassau, Bahamas
- 4TH PLACE ► Cancún
- 5TH PLACE ► Freeport, Bahamas

PACIFIC

- 1ST PLACE ► Cairns, Australia
- 2ND PLACE ► Queensland, Australia
- 3RD PLACE ► Moorea, Tahiti
- 4TH PLACE ► Rarotonga, Cook Islands
- 5TH PLACE ► Fiji

BRIAN PARKER/TOM STACK ASSOCIATES

DOUG PERRINE

READERS' CHOICE AWARDS

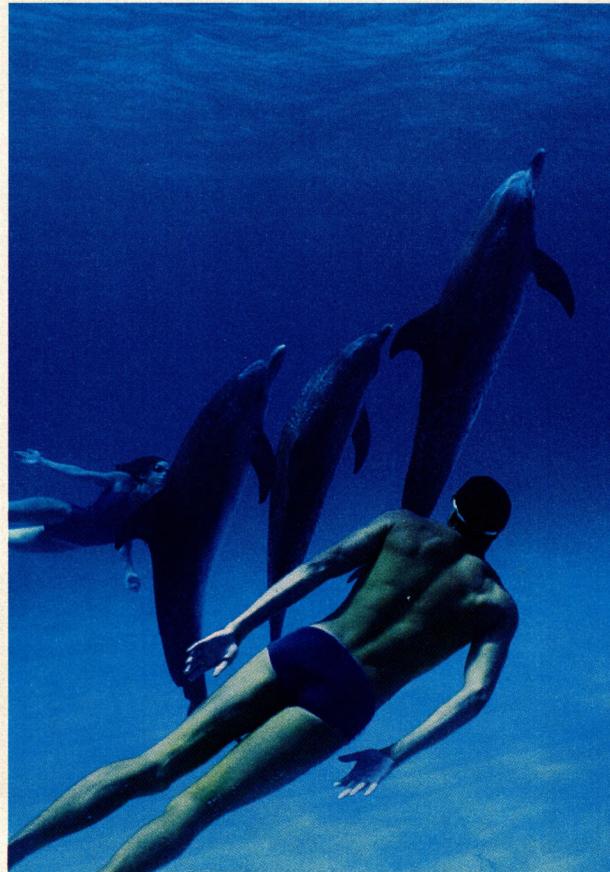
Pas de Dolphin

In the first time we saw Flipper on TV or the captive ones at Sea World, dolphins have fascinated us. And, as this set of photos shows, dolphins seem pretty taken with us, too, even willing to play and dance. Photographer Doug Perrine visited the northern Bahamas with two different groups to capture this *ballet sans gravité*.

The Wild Dolphin Project, a Florida-based organization involved in a 20-year study of spotted dolphin behavior, put scientists and researchers in the water with approximately 80 of these friendly fellows to study their methods of communication. The Delphys Foundation, a California non-profit group that promotes marine conservation and ocean awareness, sent down a pod of Olympic swimmers including 11-time medalist Matt Biondi and Japan's popular synchronized swimmer Michiko Kotani; these superstar athletes developed some of their in-water techniques by observing and practicing with "Stubby" and the gang. Both groups are developing educational and outreach programs based on their experience, and the Delphys Foundation also shot footage for two videotapes, *Making Contact* and *Voice of the Dolphins*.

Perrine was so moved by the grace and good nature of the spotted dolphins—and so excited by the reactions of the humans who cavorted with them—that he's sponsoring four trips to their home waters this summer, so that more of us have the chance to further our fascination and dance with the dolphins.

THE BEST OF TWO WORLDS:
OLYMPIC CHAMPIONS MATT
BIONDI AND MICHIKO KOTANI
(RIGHT) AND DAVID BERKOFF
(FAR RIGHT) SWIM WITH
SPOTTED DOLPHINS.





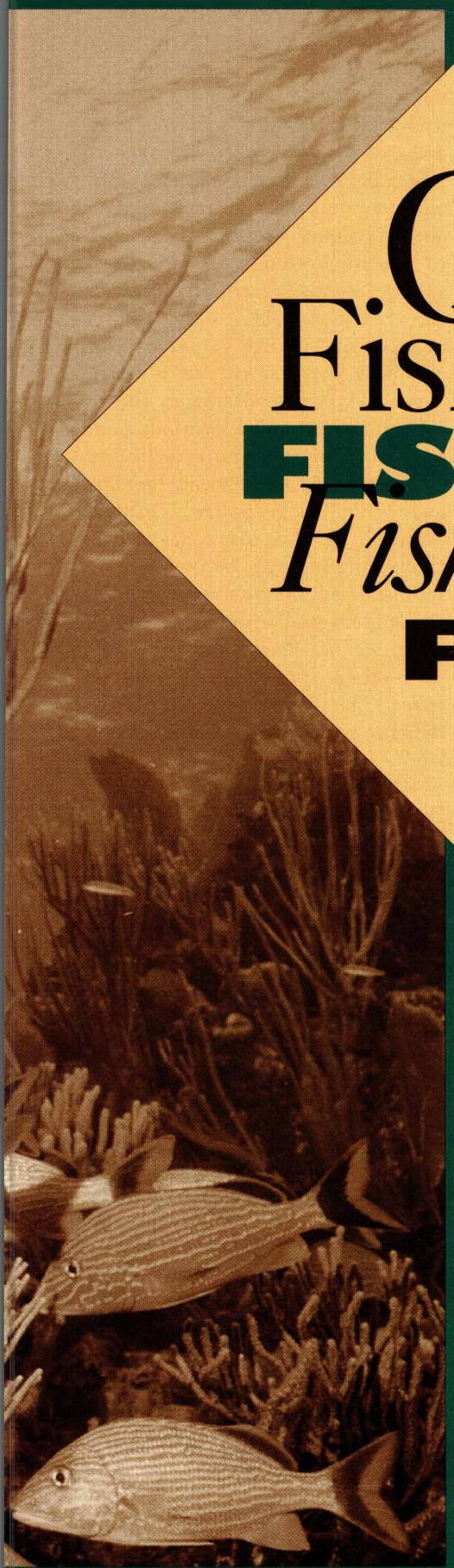


PORTFOLIO



KOTANI AND BIONDI (LEFT) IN
SYNC WITH A LONE DOLPHIN.
ABOVE, WILD DOLPHIN PROJECT
DIRECTOR AND RESEARCHER
DENISE HERZING OBSERVES
A SWIRLING TROUPE OF
SPOTTED DOLPHINS.





One Fish, **two** **FISH**, Red Fish, **Blue** **FISH**

**REEF's
volunteer fish
count promises
environmental
awareness and
some very
real science.
Here's how
you can help.**

Eight miles offshore and 90 feet down on the outside of a gently plunging fore reef, a pack of divers has caught the scent of the hunt. Here in the Key Largo National Marine Sanctuary on the sea edge of a dive site known as the Elbow, they scurry about just above the hard corals and gorgonians, peering into holes and behind sponges, driven by the need to bag *just one more* fish.

Back on the boat, the divers can barely contain their excitement. Still dripping seawater, they wave underwater slates in the air while shouting names at each other—*Dusky damsel! Harlequin bass!* *Masked goby!*—as if they've just seen these species for the first time in their lives. And, in a way, they have.

These divers are hunters, to be sure. But it's how they hunt that sets them apart from spearfishermen in quest of fresh meat. "You used to hear: 'Hey, did ya see that flock of pretty silver fish?'" says Jean Gasen, a college professor from Richmond, Va., who was part of a pilot team testing the new Reef Fish Survey Project in the Keys. "Now, it's: 'Aha, school of gray snappers!' And, 'Did ya catch the size of that Caesar grunt?' For the first time, I've actually

BY BILL BELLEVILLE

begun to see all the different fish."

Like topside birders who stalk the woods in search of a new avian species to add to their lifetime Audubon list of sightings, these divers are here not to skewer their quarry with a sharp metal point but to bag them with pencil and underwater slate. In doing so, they also deepen their understanding of the marine environment and develop an abiding connection to it.

"In the '60s and '70s, we speared fish," says Ned DeLoach, co-founder with photographer Paul Humann of the new Reef Fish Survey Project. "In the '80s, we photographed them. Today, we ID them."

Fair enough. But there's more to this revolutionary program than simply learning to name stuff under water. Divers record their sightings on computer scan sheets—along with information about depth, location and water temperature—then send the sheets to the nonprofit organization REEF, acronym for the Reef Environmental Education Foundation in Key Largo. The foundation scans the sheets using computers donated by IBM. The computers first read the number of each species recorded on the divers' sheets, then provide a total for each species at the dive site. All data is then forwarded to the agency responsible for the health of that particular area.

For instance, in the new Florida Keys National Marine Sanctuary, reports would go to the local NOAA office as well as to the National Marine Fisheries Service (NMFS), which sets quotas and no-take rules for threatened species. In the Bahamas, reports will be forwarded to the Bahamas National Trust; in Bonaire, to the Bonaire Marine Park.

The fish tallies will provide scientists and administrators valuable information that they might otherwise have to go without. "A lot of basic research is no longer being funded,"



"In the '60s and '70s we speared fish. Today we ID them."

says Dr. Mike White, a NOAA biologist who began his career conducting scientific fish counts in the waters of Pennekamp State Park. "Yet, as managers we need to know how fish populations are doing over the long term so we can take action to protect them."

Such information is especially crucial in the Keys, where

officials are scrambling to fully fund the new national marine sanctuary there. "With a little training, the dive community can do a lot of the surveys we used to do," says White, former director of the Key Largo sanctuary.

Besides helping resource managers make a stronger case for replenishment zones and for protection of individual species, Dr. James Bohnsack, a biologist with the National Marine Fisheries Service in Miami, says the volunteer program can also sound the alarm for problems before they become epidemic—such as the die-out of the

long-spined urchins (*Diadema antillarum*) in the Caribbean a few years ago. Bohnsack also predicts the surveys will be used by academic ichthyologists studying health, behavior and growth—much as today's volunteer bird counts are used by ornithologists, who rely on data from the Audubon Society's annual Christmas bird count to legislate protection for endangered species like the loggerhead shrike, to cite a recent example.

But REEF's fish survey project also provides a motivation, a *raison d'être*, to keep us under water. There's something about this vicarious hunt that recaptures the pure thrill and innocent joy we all experienced on first making the plunge as newly certified divers. If we have lost some of that thrill along the way, becoming more sophisticated and world-weary with our underwater knowledge—*Been there, seen it, dived it*, as the T-shirt says—then finding new ways to recreate that sense of adventure may be far more profound than we could ever know.

"Everyone talks about the Discovery Channel," says DeLoach, whose unaffected good humor and Boy Scout-like earnestness seem infectious. "You can be your own Discovery Channel." Such sustainable fun for the

DISSECTION BY DISTANCE

The science of classifying and understanding marine life has lagged far behind that of its topside counterpart. Amateur birders have had the advantage of field guides and scopes for centuries; yet most marine scientists didn't begin to use scuba for on-site observation of fish and coral until the 1950s.

Still, it was surprising when, in compiling his three marine life guides, Paul Humann stumbled across a number of animals that had not been classified or were entirely out of their known range. He sent questionable species to the Smithsonian Institution for investigation. And the surprises keep coming: "I just photographed a new coral species the other day down in Roatan," says Humann. "Off West Palm, I got one whose entire genus wasn't thought to be in the Western Hemisphere, let alone the species."

Historically, identifying marine life took place by dredging up specimens from the sea, destroying their habitat while preserving them in a jar, then sending the dead critters off to a lab for dissection where they would be classified by internal parts. "In our coral guide, we started putting in museum collection numbers," says Humann. "Now, coral scientists are saying, 'Ah, that's what it looks like alive.'"

Unlike most terrestrial critters, fish also present a more confounding identification problem since many not only go through drastic changes in colors and markings during their life cycles, they also change sex. Factor in a marine environment as biologically diverse as a rain forest—but far less accessible—and a trained observer can easily spend the rest of his or her underwater life filling out bubble sheets.

We can't all go off like Indiana Jones in search of the Temple of Doom. But fish counters can be true adventurers, launching a mini-expedition with a chance for ecological discovery—as well as a guarantee of a real-life connection—during each dive.



PARTICIPANTS IN REEF'S FISH SURVEY PROJECT PERFORMED A SCIENTIFIC FISH CENSUS IN THE KEY LARGO NATIONAL MARINE SANCTUARY.

diver could even mean that people will continue to dive longer and do it with more frequency. "It'll be great for diving," asserts DeLoach, "because it's a way to keep people active in the sport."

He could be right. Listen to Spencer Slate, veteran diver and long-time dive shop operator in Key Largo who participated in early field tests of the project: "You've got people out here bouncing around on the boat like they're kids again," says Slate, who seems to have bitten off a good chunk of that excitement for himself in an abiding quest to add a tiny fish called the redlip blenny to his own fish tally.

Slate, a big man not known for his fascination with the subtle and the excruciatingly minute, jumped full stride into the program—not only going off in a sea hunt for a Lilliputian the size of his little finger, but also launching an archetypal critter ID course from his shop. "It's just like the old days of spearfishing. Except now, we're counting them," says Slate. "And it dovetails perfectly with the conservation thing so important to divers these days. It

I CAME, I SAW, I COUNTED

Along with an eclectic handful of sport divers—including a schoolteacher, banker and law professor—I have been learning this week to identify fish in a course taught in tandem with the new Reef Fish Survey Project.

REEF director Laddie Akins has downloaded us with nifty visual hints to help us sort through the 150 or so species of reef fish (out of a possible 400) known to live in the waters of the Keys. We have learned to look for tell-tale markings like bars, stripes and bands, to recognize unique fin shapes, and even to create our own sight gags linked to fish names: Surgeonfish have a sharp "scalpel" at the tail; a mutton snapper sports a dot above its lateral line—the "button" on the mutton; a dog snapper has a triangular splotch or "dog tag" under its eyes.

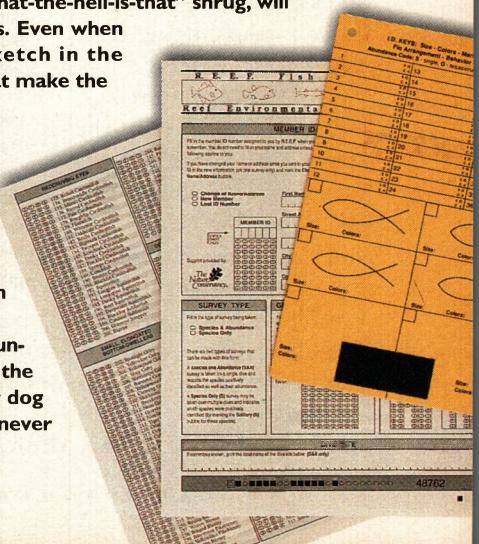
To test our newly acquired knowledge, we go forth night and day for a week, matching our ID tips with the vast, swirling masses of marine life in the waters off Key Largo, faithfully scribbling down fish names on our trusty underwater slates. Despite nearly 17 years of diving, I'm seeing and remembering new species on nearly every dive.

Below with us every day is also an ever-changing cast of marine scientists with an abiding interest in our work. Each dive team has at least one experienced fish spotter who, when confronted with the classic "what-the-hell-is-that" shrug, will take your slate and write down what the hell it is. Even when out of range of an expert, we can simply sketch in the unknown critter on the slate and back on the boat make the positive ID from the Reef Fish Guide.

At the end of the week, I watch as magazine editor Robert Antonelli hovers over a coral boulder in 90 feet of water near a large sea turtle at rest. Antonelli summons Jean Gasen, his dive buddy, and points to the turtle. Gasen nods, then looks past the more spectacular sea turtle to a small, inconspicuous fish and on her slate writes, "butter hamlet."

It is the way of the world now for us fish counters, a way in which the tiny hold equal court on the slate with the big, a world where snappers wear dog tags, surgeonfish wield scalpels—and the reef will never be the same.

JOE BYRD



COUNTING IN THE KEYS: AS EASY AS 1-2-3



PAUL HUMANN

The remarkable camouflaging abilities of the fringed filefish (left) and the greenblotch parrotfish (center) make them as tough to find as the seminole goby (right), but not for the trained counters in REEF's Fish Survey Project.

even works for old dive Neanderthals like me."

FROM BUBBLEHEAD TO BUBBLE SHEET

A shared respect for the underwater world and a diligence in tracking the health of its inhabitants led DeLoach, former teacher, and Humann, the former operator of the first live-aboard in the Cayman Islands, to publish the now-classic *Marine Life Identification* series, a three-volume encyclopedia of vivid photos referencing reef fish, invertebrates and corals.

The guidebooks, which broke new ground by incorporating techniques used in terrestrial wildlife field guides, arguably provide some of the most complete information divers are likely to find in their quest to identify marine life in the wider Caribbean basin, including Florida. But as the two researched information about the geographic range of each species, it became clear how close to the cutting edge they actually were.

"I'd ask scientists, 'What is the range of the splendid toadfish?'" recalls Humann. "And they'd say, 'Well, we don't know for sure.' Fact is, despite the field stations around the Caribbean where scientists track fish, there's an awful lot of territory in between where no one really keeps records."

It seemed logical, then, for

DeLoach and Humann to help divers better record what they saw by designing products such as an underwater slate and a logbook listing all the known species for that region. But the reality of having thousands of divers running around with handwritten survey notes was mind-boggling: Where would divers send their notes? Could scientifically useful tallies be produced from the observations of recreational divers?

With such questions in mind, DeLoach and Humann formed the nonprofit REEF and then set out to produce some answers. To bring as many volunteers aboard as quickly as possible, they decided to seek grants for operating funds and make membership free. In a world where you don't play unless you pay, the idea was revolutionary.

HOW TO HELP

To become a member of REEF, contact your local dive shop or write for a free membership packet to P.O. Box 246, Key Largo, FL 33037. While the first stage of the project is limited to reef fish in Florida, the Bahamas and the Caribbean, long-range plans are to expand the counts to include corals and invertebrates, and later to extend the geographic range of the survey.

"We wanted to make it easy for everyone to get involved," says Humann. Indeed, REEF hopes to have a volunteer corps of up to 20,000 divers by the end of its first year, with regional groups or clubs formed to focus on local needs.

To keep the data as standardized as possible, REEF members are sent detailed computer-scan pages called "bubble sheets." Tiny ovals, or bubbles, easily scanned by computer,

are penciled in along with information needed to make a sport diver's count as scientifically valid as possible: navigational coordinates of the dive site, time, duration, depth and visibility of the dive, water temperature, current and habitat description, as well as the names of the 400 species found in the region. Each species gets its bubbles filled in according to how many of its brethren are sighted on that same dive: solitary (1), few (2-10), many (11-100) and abundant (over 100).

Scientists like NMFS's Bohnsack reviewed the proposed bubble sheets to make sure they had what researchers would need. Ken Marks, a sport diving computer expert, volunteered to write the software to turn the multitude of bubbles into computer code, compiling data into scientifically useful tallies.

Kathleen Scott, a Miami banker who was part of the dive team testing the project in the Keys, feels the detail in the reports will help provide the ammunition needed to right environmental wrongs. "I've been diving six years on the same reefs here and I've seen problems develop," says Scott. "This is my backyard, but there's nothing I can say anecdotally as a diver that will do any good. The Fish Survey gives me a chance to provide the data needed to force the action to solve those problems—in other words, a chance to save my own reefs. It's truly visionary."

Bill Belleville is a Senior Editor of RSD. He spent a week last summer as part of a research team for the Reef Fish Survey Project in Key Largo.



Dive For The Future

Join R.E.E.F. Reef Environmental Education Foundation

PROTECTING MARINE LIFE THROUGH EDUCATION, SERVICE, & RESEARCH

REEF invites you to become part of an exciting, new underwater activity for recreational divers — monitoring the health of coral reef ecosystems. This important task is vital to the preservation of our marine wilderness.

For decades bird watchers have provided a similar service. Their enjoyable pastime has proven invaluable for the understanding and preservation of bird life. Unfortunately, comparable data for marine life is unavailable even for coral reefs that are visited by thousands of divers each year.

REEF's initial goal is the implementation of the REEF Fish Survey Project. This program requires an extensive network of volunteer divers to gather fish species sighting data during their diving vacation in Florida, the Caribbean and Bahamas. Even beginning fish watchers can make significant contributions. Dues or fees are not required. Your membership is paid by corporate sponsors from the recreational diving industry. To receive more information, simply drop a note to REEF at the address below.



JOIN TODAY!

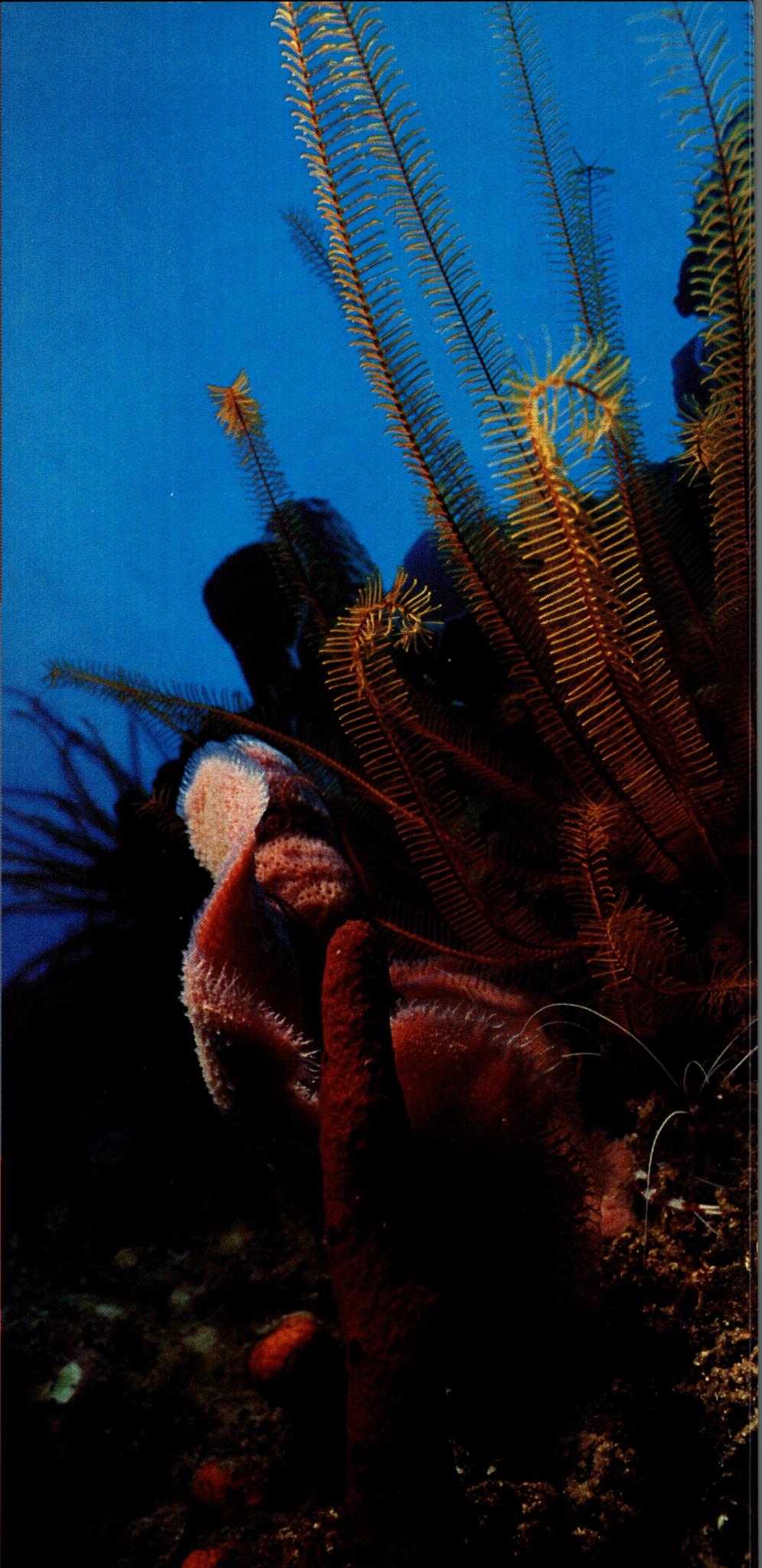
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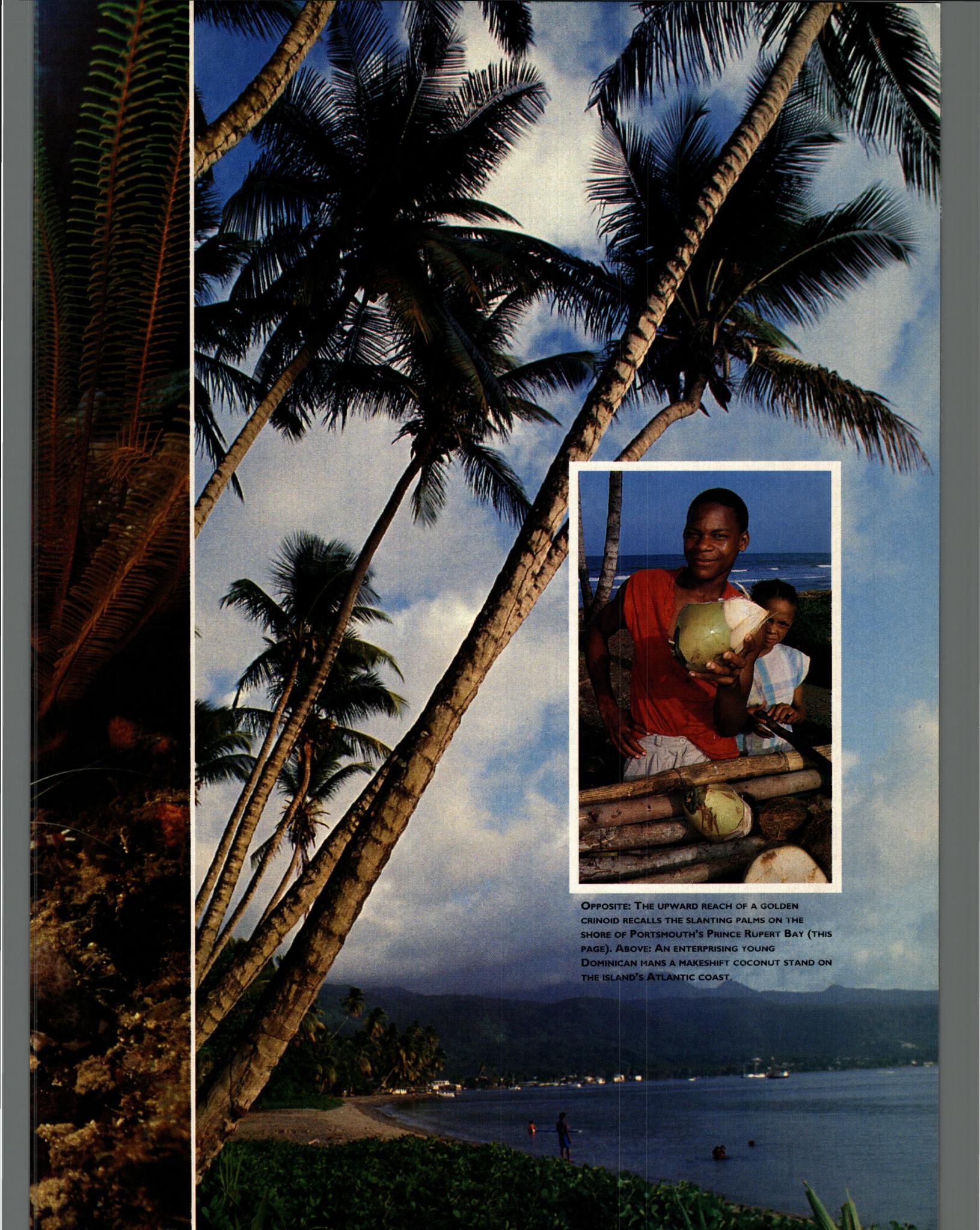
DOUBLE YOUR PLEASURE

From rain forest-capped mountains to underwater volcanoes, Dominica reveals an embarrassment of riches both above and below the water.

BY
BUCK
BUTLER

PHOTOGRAPHY BY
CHRIS CRUMLEY





OPPOSITE: THE UPWARD REACH OF A GOLDEN CRINOID RECALLS THE SLANTING PALMS ON THE SHORE OF PORTSMOUTH'S PRINCE RUPERT BAY (THIS PAGE). ABOVE: AN ENTERPRISING YOUNG DOMINICAN MANS A MAKESHIFT COCONUT STAND ON THE ISLAND'S ATLANTIC COAST.

Dive In

GENERAL: Dominica is an independent nation located at the northern end of the volcanic Windward Islands chain, which separates the Atlantic Ocean from the Caribbean. Guadeloupe lies to the north, Martinique to the south.

TOPOGRAPHY: The most mountainous island in the Caribbean, Dominica boasts peaks reaching nearly 5,000 feet. Throughout, the hills are covered with lush tropical rain forest. Beaches are narrow and composed mostly of pebbles and volcanic black sand.

CURRENCY: The Eastern Caribbean dollar (\$1US=\$2.67EC at press time). U.S. currency and traveler's checks are accepted nearly everywhere on the island.

LANGUAGE: The official language is English, but the first tongue of most Dominicans is Creole, a French patois.

DOCUMENTS: U.S. and Canadian citizens will need a valid passport or birth certificate and photo ID along with a return ticket. Visitors from elsewhere need a valid passport.

CLIMATE: Daytime temperatures average between 75F and 90F. Ocean breezes mitigate the tropical heat and temperatures in the mountains can be appreciably lower. Expect the lowest temperatures from November to February. You can count on seeing some rain (and some rainbows) during a stay in Dominica. The rainy season extends from July to October, but the coast doesn't get as much rain as the high-altitude rain forest.

WATER CONDITIONS: Though the island is drained by hundreds of rivers and streams, the jagged volcanic underseascape keeps runoff sediment from being carried along the coast and clouding the water. Visibility ranges from 60 to more than 100 feet. Water temperatures are mild year-round, never dipping below 75F.

DIVERSIONS: Pack a pair of comfortable sneakers and leave the high heels at home; most of Dominica's non-diving attractions are on the trails. Many of the most popular hikes lead to waterfalls—Trafalgar Falls, Victoria Falls, Sari-Sari, Emerald Pool. The real test is a strenuous six-hour round-trip hike through the sulphurous and steaming Valley of Desolation to the second-largest boiling lake in the world. Morne Trois Pitons National Park, with dozens of marked trails, holds many of the island's natural attractions. Other popular tours include trips to the Carib Indian Territory and to Fort Shirley at Cabrits National Park, just north of Portsmouth. Guides are readily available for any of these excursions. Also, don't miss the bustling Roseau Market, where farmers' wives spread sheets on the sidewalk to hawk a seemingly endless variety of tropical fruits and vegetables. When planning your hikes, be mindful that high altitude and a strenuous workout can contribute to decompression sickness. Dive conservatively and rest an hour or two after your last dive before undertaking any strenuous activity.

DIVE OPERATORS: Two operators are located just south of Roseau: Anchorage Dive Center at the Anchorage Hotel, (809) 448-2638; and Dive Dominica at the Castle Comfort Lodge, (809) 448-2188. Anchorage also runs an operation on the north coast near Portsmouth. Two other operations are located on the central Caribbean coast: Castaways Dive and Watersports at the Castaways Beach Hotel, (809) 449-6244; and East Carib Dive, which is associated with the Lauro Club Hotel, (809) 449-6575.

GETTING THERE: Dominica has two airports, neither of which can accommodate passenger jet traffic. Melville Hall Airport is inconveniently located on the northeast corner of the island. Canefield Airport is just north of Roseau. If you'll be staying in or around Roseau, try to arrange your flights through Canefield. Because only propeller planes can fly into Dominica, you'll have to catch a connecting flight from a nearby island. Flights to the island come through Antigua or St. Maarten. LIAT is the major carrier. Save a little cash at the end of your stay for the \$25EC airport departure tax.

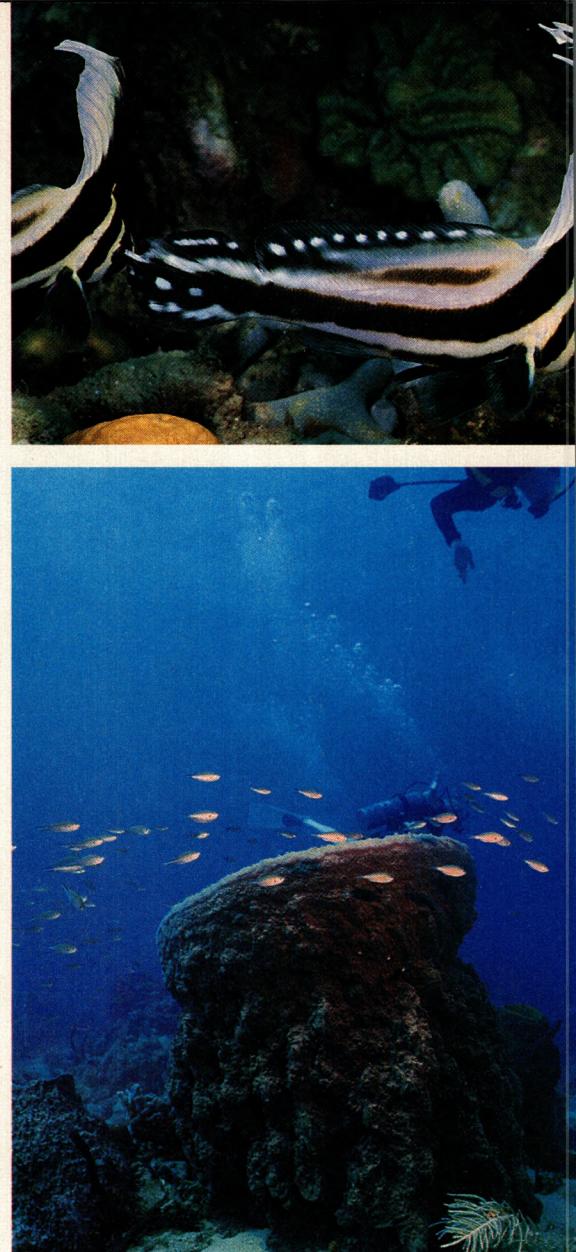
GROUND TRANSPORTATION: You can rent cars in Roseau, but the easiest and most efficient way to get around is in the Japanese mini-van taxis that seem to be everywhere. Many taxis stop service at 6 p.m., so be sure to make arrangements early if you plan to go out at night.

FOR MORE INFORMATION: In the U.S., contact the Caribbean Tourism Organization at 20 East 46th St., New York, NY 10017; (212) 682-0435. On the island, the Division of Tourism can be reached at P.O.

Box 73, Roseau, Commonwealth of Dominica; (809) 448-2351.

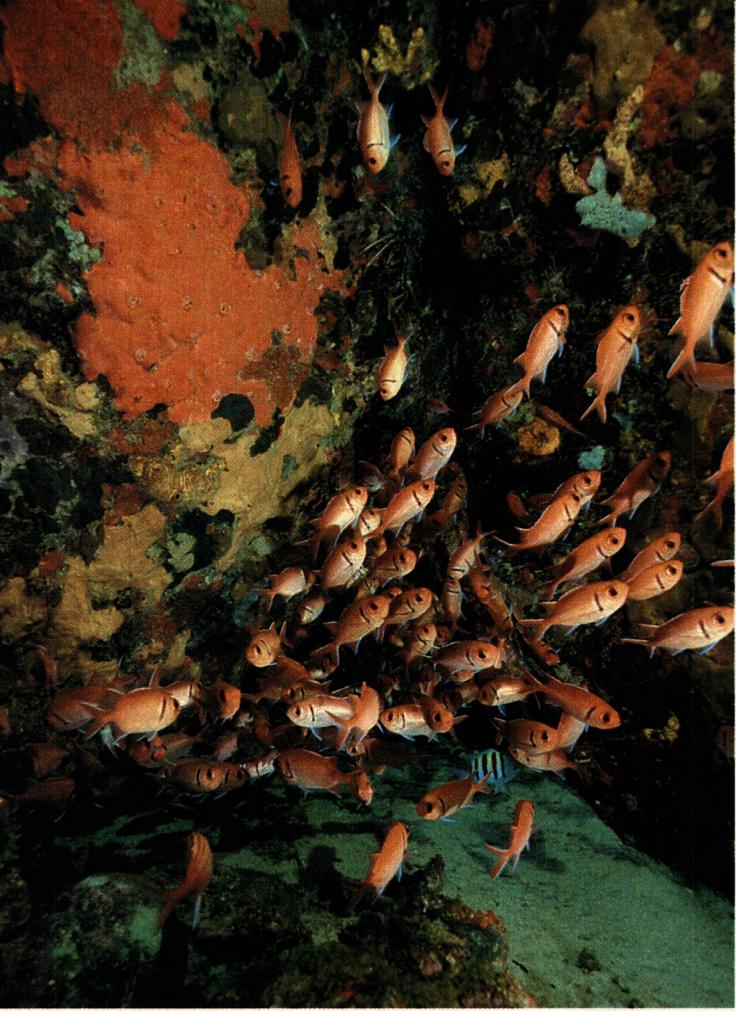
JUST IN CASE: Dial 999 for police, fire and ambulance. There's no recompression chamber on Dominica. In case of diving emergency, contact the DAN Emergency Line at (919) 684-8111; their general number is (919) 684-2948.

MAP BY KAREN MINOT

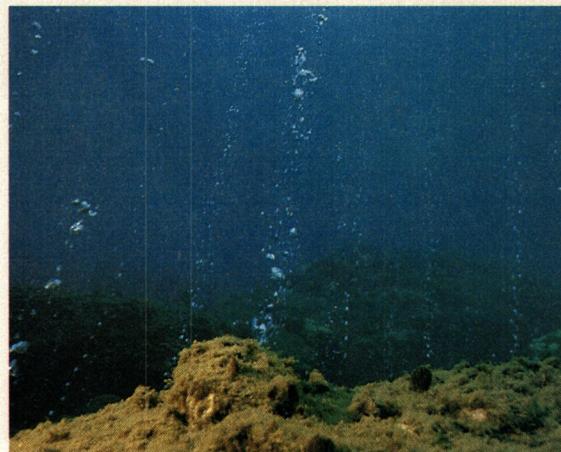
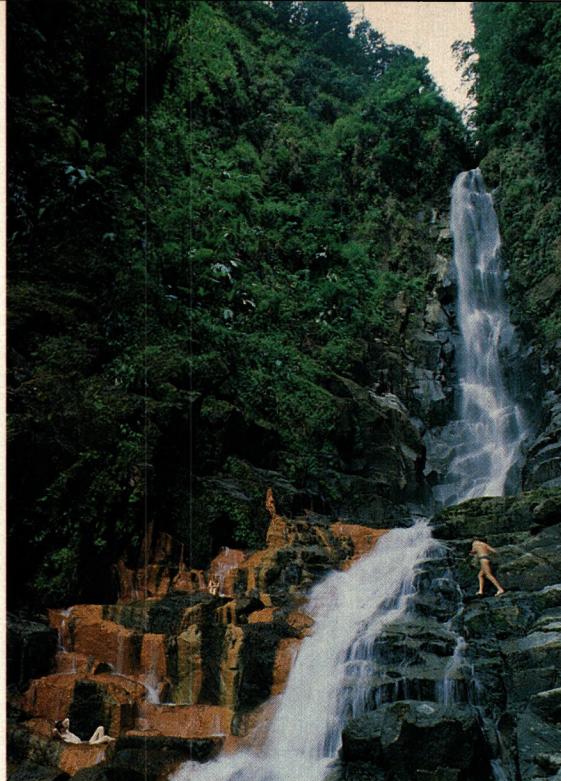


here's this hissing sound. I turn, expecting to find my regulator first stage venting into the water. Whew. Not me. With two quick kicks, I push over the reef crest and down the other side where the faint hiss crescendos, now accompanied by a low rumble from the ocean floor.

Before me is a Lawrence Welkian hallucination: streams of bubbles spew from tiny openings scattered among the volcanic rocks and sand. Heated deep beneath the surface, the water percolates out here to create a natural jacuzzi. The surreal impression intensifies at one large vent where the fresh water refuses to mix with the salt, creating a syrupy blur. I stick my hand in the cloud to test its scalding temperature: the natural plumbing beneath



TOP LEFT: A PAIR OF SPOTTED DRUMS BRING A FLAIR FOR THE DRAMATIC TO RODNEY'S ROCK, A SITE WITH A THEATRICAL HISTORY OF ITS OWN. ABOVE: A LOOSELY REGIMENTED TROOP OF BLACKBAR SOLDIERFISH. ABOVE RIGHT: ROCKS AT THE BASE OF TRAFALGAR FALLS ARE STAINED ORANGE BY THE IRON-RICH HOT SPRINGS THAT BUBBLE OUT HERE. RIGHT: THE HEADY FRESH-WATER BUBBLES OF CHAMPAGNE. LEFT: DOMINICA'S BARREL SPONGES ARE NEARLY AS OLYMPIAN AS ITS MOUNTAINS.



these volcanic boulders springs from the fiery heart of Dominica.

Back on the boat I know why this effervescent dive site off Dominica's southwest coast is called Champagne. We're all slightly tipsy from the experience. Dominica has a tendency to do that to you. Whether it's an underwater hot-tub party or a towering waterfall crashing into the rain forest, this is a place where you can drink your fill of nature's watery gifts.

TREASURED ISLAND

Diving amid the submerged hot springs off the rocky coast of the island is as close as you're likely to get to a glass of bubbly in Dominica. Tastes here lean more toward native fruit juices—guava, passion fruit, tamarind and soursop. You'll see towering mountain

peaks, but no towering high-rise hotels. You'll pass goats and chickens on the island's winding and narrow roads, but probably not a single Acura or BMW.

Dominica is that rarest of finds among dive destinations—an island that hasn't been changed by its own beauty. Instead, the island's natural treasures are at least partially responsible for keeping high-end tourist development at bay.

Physically, Dominica stands between two bodies of water—the Atlantic beats on the eastern shore while the western beaches are lapped by the Caribbean. Spiritually, Dominica stands between two ages, on the threshold of becoming a mainstream tourist destination even as its people hold to their simple livelihood as tenaciously as the brick-red Bois Caribe flower clings

to the island's stony shoreline.

After Christopher Columbus returned from his second voyage to the New World 500 years ago, he is said to have described Dominica to Ferdinand and Isabella by tossing a crumpled sheet of paper on the table in front of them. While the explorer's gimmick might have implied the difficulty of penetrating Dominica's rugged landscape, it could hardly convey the dramatic beauty of the terrain.

From the northern tip of the island at Point Jaquet to Scotts Head in the south, the island's profile is distinctly vertical; Dominica is 75 percent mountains. From any vantage point, it's hard to believe the figure isn't closer to 95 percent, but the valleys must count for something. The tallest mountain, Morne Diablotin, soars to nearly 5,000

feet and plenty of others reach nearly that high.

Rain-sodden easterly trade winds roll up the mountainsides and gather in heavy clouds that often shroud the highest peaks. The island creates its own micro-climate, collecting and then dumping enough rain to nourish one of the world's last oceanic rain forests. In turn, the rain forest is as prevalent as the mountains, covering summits and flanks with an eye-catching show of greens. This, the most mountainous island in the Caribbean, also happens to be among the lushest.

The surplus of rain—up to 300 inches a year in places—has another welcome side effect: an abundance of flowing fresh water. Dominicans are fond of telling visitors there's a river

for every day of the year here, and it's easy to believe. The journey from mountainside to sea is a quick one on an island that measures just 29 miles long by 16 wide, and rainwater will take any route available. Along the way, some of these streams must drop thousands of feet, adding yet another gem to Dominica's virtual embarrassment of natural riches: enough waterfalls to fill a week's itinerary of post-dive hikes.

I am making just such a hike to Titou Gorge when the conversation turns, as it often does here, to the future of tourism on Dominica. Ken Dill owns a tour service, leading visitors over mountains, through the dense jungle, to secluded swimming holes. His entrepreneurial enthusiasm is tempered by his love for the island. He notes the dams between Dominica and the flood

of tourist dollars. The narrow black-sand beaches are a far cry from the wide alabaster stretches of sand that many sun-worshippers seek. Neither of the island's two small airports can accommodate big passenger jets. Mountain

alcove as a way station between fighting the swift current and climbing the sheer rock wall. Treading water at the base of the falls, I watch the children of banana farmers dive and backflip into the pool, one after another, reveling in the natural wealth of the island. Here as elsewhere, the bond between the Dominican people and their tiny corner of Earth is innate and unwavering, stated bluntly in their national motto: "After God, the land."

REEF POLICE

In a land with a seemingly boundless supply of fresh water, a land that separates two seas, the rationale behind that simple ecological credo extends off its shores.

A *de facto* marine reserve on the southwest corner of the island encompasses the dive sites in and around Soufriere

Bay, Dominica's most frequently dived area. Management of the reserve—which has yet to be formalized by legislation—relies on the implicit bond between the people and their home.

Instead of using scarce financial resources to buy boats and hire enforcement officers, the Dominican government counts on local fishermen to police the reserve. A provision in the country's Fisheries Act gives locals the power to escort errant yachters and their coral-crushing anchors out of the bay and to keep an eye on their fellow netters' mesh sizes to ensure healthy populations of young fish. While this may sound like asking the foxes to guard the proverbial henhouse, the Fisheries Division believes the education program it's recently put in place will convincingly tie the health of the reef to the welfare of the people.



AN ABUNDANCE OF RAINFALL NOURISHES DOMINICA'S RAIN FOREST, WHERE IT SPILLS FROM FALLS AND GATHERS IN PLACES LIKE EMERALD POOL (ABOVE) IN TROIS PITONS NATIONAL PARK. REMNANTS OF VOLCANIC ACTIVITY PROVIDE A FOOTHOLD FOR A WEALTH OF INVERTEBRATES LIKE THIS GIANT ANEMONE (LEFT) NEAR THE SOUFRIERE CRATER.

slopes provide scant purchase for hotel foundations. He smiles confidently, "There are no golf courses on Dominica." And then after a pause, "The island always comes to its own defense."

When we reach Titou Gorge, I find that it's not a hike at all, but, true to form on this waterlogged island, a swim. The canyon's walls rise 50 feet straight up from the surface of the stream that flows through it. Overhead, the rain forest's dense canopy fragments the tropical sunlight, allowing occasional shafts to shine obliquely into the gorge. I make the 50-yard upstream swim in chilling water to reach the small but powerful waterfall that empties into the narrow canyon. The last few feet are a difficult push without fins, to get to a niche in the rock wall beside the pool that catches the waterfall.

A group of teenage boys is using the

And with generous areas set aside for fishing, the reserve is zoned to offer more access to islanders than some of the touch-me-not marine parks elsewhere in the Caribbean. "In a reserve you allow certain things to happen," says Chief Fisheries Officer Nigel Lawrence. "Traditional users of the ecosystem should have perpetual rights to that system."

LAVA LOVE

Dominica's rich marine ecosystem begins where its lush topside vegetation ends. The mountains plunge into the water, leaving little room for beaches; the coast is scalloped by bays and rocky spurs. Beneath the surface, the volcanic flanks provide a foundation for the corals that is as rich as the loamy topsoil above.

Diving Dominica is a Caribbean endeavor. The windward Atlantic coast on the east side of the island is every bit as scenic as the Caribbean shore, but unpredictable weather and currents keep divers on the opposite side of Morne Diablotin.

Dominica's best known dive sites are nestled in and around Soufriere Bay, a short boat ride from two operators' docks located just south of the capital, Roseau. The bay is shielded from the Atlantic by Scotts Head, a promontory connected to the mainland by a narrow spit of land. The headland becomes a familiar point of reference for anyone who dives the area, but the geological focal point of the bay lies under water.

The submerged Soufriere crater, a quarter-mile in diameter, crowns an ancient volcano that is dormant but teeming with life along its rim. The caldera offers a diversity of profiles—you can fin from shallow snorkeling

sites to bottomless walls before taking a hundred pounds off your pressure gauge. The western edge of the crater is blown out, so the reefs that start at 15 or 20 feet near the shore gradually slope off well beyond recreational div-

form a miniature skyline that rises off a rolling landscape of encrusting corals and sponges. Black-tipped arms of golden crinoids reach out of fluorescent azure vase sponges, a color combination only an interior designer could resist.

A compendium of Caribbean tropicals fills the water column just above the reef. Gobies and wrasses hang close by while butterflies, angels and parrotfish soar around pinnacles and through valleys. The unofficial national bird of Dominica is the endangered Sisserou parrot, which lives nowhere else on Earth. If there's a national fish, it must be the much more abundant blackbar soldier-fish. Normally shy shadow-dwellers, they're ubiquitous here—entire regiments marching freely over the reefs as they seem to gather for deployment.

ment to other parts of the Caribbean.

AWOL from these waters, however, are the bigger species. The four-foot barracudas and 40-pound groupers that are constant companions at many Caribbean sites are infrequent visitors to these otherwise healthy and fishy reefs. Blame it on years of unchecked subsistence fishing, a plague the Fisheries Division is working to remedy with the marine reserve. But without the big boys vying for your attention, you'll find yourself taking a closer look at the smaller critters. And what a view you'll have—pick 10 square yards of reef and you'll no doubt find more species than at your local zoo.

The reefs sitting atop the north edge of the Soufriere crater take a dramatic downward turn at L'Abym, a wall that falls abruptly from 20 feet into the abyss. (*Continued on page 101*)

THE LAST OF THE CARIBS

Winding along the Atlantic coast, we pass colorful hand-made rowboats resting on the pebble beach at Castle Bruce, and begin the climb toward the village of Salybia. "We're now on Carib land," our driver says as we pass a small sign—presumably announcing the same—too quickly to read.

Other than the sign, there is little to indicate that we've entered the last organized settlement of the proud tribe that gave its name to the Caribbean Sea. Judging by the terrain, the vegetation and the small houses raised on stilts, we could be anywhere on Dominica. The only differences immediately apparent lie in the features of the people who walk the roadside: their skin is lighter, their faces and eyes wider and hair straighter than the descendants of African slaves who walk the other stretches of road on the island. Though intermarriage has blurred distinctions, the nearly Asian features of the Carib Indians are still prominent here.

The Caribs made their way north along the Lesser Antilles from South America some 1,000 years ago, taking Dominica from the Arawak Indians who preceded them by a millennium. They dominated the island chain until the advance of European settlement five centuries later. The nearly impenetrable rain forests of Dominica became the Caribs' last stronghold.

The 3,700-acre Carib Territory is a rugged wedge of land on the northeast coast of the island, originally set up as a reserve in 1903 after centuries of fighting among French, British and Caribs. The reserve became a territory when possession of the land was turned over to the governing Carib Council in 1978, but wounds inflicted during the Age of Discovery are slow to heal.

A steep climb up an unpaved road brings us to the modest Carib Council Office. Painted on the cement wall next to the entrance is a rallying cry for a people that has lost its language and much of its culture: "500 Years of Columbus Lies." Inside, there is a display of watertight straw baskets the Caribs still weave from the laoma reed that grows along the road, and another slogan on a legal-sized sheet of paper stapled to the wall: "You cannot discover an inhabited land. Otherwise, I would sail across the Atlantic and discover Europe."

ing depths. The drop inside the crater is less forgiving, falling vertically into a gaping hole whose depth has yet to be measured accurately.

Our diving starts on the northern edge of the Soufriere crater with a look at Danglebens Reef, a structure that extends more than a mile from shore, falling off gradually as it reaches toward the edge of the island's narrow plateau. Beneath the boat, a bed of garden eels, planted in orderly rows on the sand flats, undulate in a light current that urges us toward the reef and threatens to carry the inattentive up and over, into the maw of the volcano.

The pocked surface of the reef's foundation provides an endless array of nooks, crannies, niches and cubbyholes which host a dense population of invertebrate life. Clusters of yellow tube sponges and massive barrel sponges

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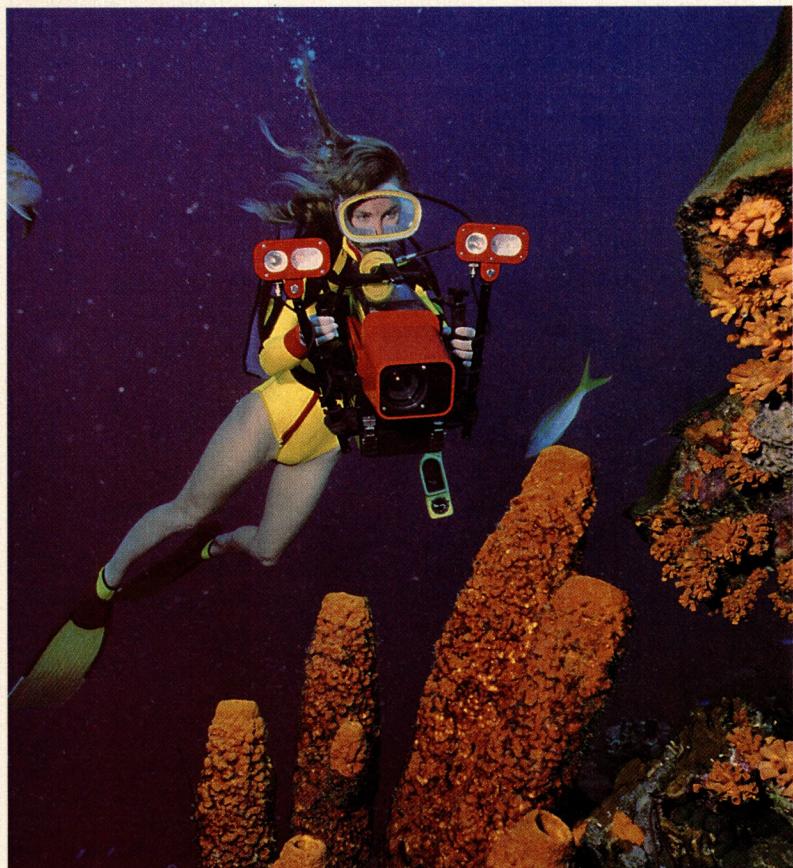


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THE FLORIDA KEYS

America's Paradise



PHOTO BY LINDA REEVES

*I*magine falling backward off the side of a dive boat. A thick cloud of air bubbles from your regulator blocks your vision. Quickly the water clears and you take a peek. It is as though you have passed through the water's surface into another world—a weightless, extraordinarily beautiful universe in the middle of an explosion of colorful marine life.

Suddenly, you coast into a thick school of mixed grunts and snappers, hundreds of them packed together, gliding through the water in simultaneous formations. Dozens of rainbow-colored parrotfish poke around the ocean floor. Friendly French angels swim up as if to say hello. You look up just in time to see a giant eagle ray flap its expanded wings and circle not more than four feet from you.

This describes the type of excitement found in one of the world's most dazzling diving areas, the Florida Keys, located a mere stone's throw from Florida's mainland. There's no doubt about it, the Florida Keys boasts an underwater paradise, making the area the most dived destination on earth.

It is the magnificent coral reef system which extends from a point off the southern tip of the mainland and sweeps south and west for 150 miles beyond Key West that has given the Keys its reputation. These world-famous reef communities are formed by more than 52 varieties of West Indies corals and are home to more than 500 species of fish.

It is hard to believe all this pristine beauty lies only 42 miles southwest of Miami. For U.S. visitors, travel is simple. There are no long immigration and customs lines, language barriers or unfavorable currency exchanges associated with foreign travel.

And once there, it is quite easy to move up and down the island chain. The Overseas Highway is the main road through the Keys and the "highway that goes to sea" is one of the most scenic roadways in the world, surrounded by beautiful, shimmering water.

It is also simple to reach the best underwater sites because there is a dive shop in practically every nook and cranny.

Overall, the Florida Keys offers excellent opportunities for divers both topside and under water. There is only one catch. The slow, caressing, irresistible witchery of America's islands grows on you. You forget the past, the present, material things. You think of nothing except the beautiful water and its creatures and you wish you could melt away forever.

plus some nice artificial reefs.

The area is also home to the *San Pedro*, a sunken galleon which was part of the 1733 fleet of Spain. For its protection and public enjoyment, the wreck was designated an Underwater Archaeological Preserve by the State of Florida. Cannon replicas, trails, ballast stones, coral formations and schools of tropical fish make this an interesting shallow water "dive into history."

TAVERNIER DIVE CENTER

One of the hardest aspects of planning a trip to the Keys is deciding which accommodations to book in order to be conveniently located to the best dive areas and situated near the facilities you will be using.

At Tavernier Dive Center and Tropic Vista Motel, everything is right at the diver's fingertips. This dive resort offers a full-service dive store with high-quality rental equipment, a repair facility, large-capacity air station and two custom dive boats. *The Shadow* is a 40-foot custom dive boat fully appointed to take divers to the many fantastic local diving sites, while Tavernier's newest dive boat, *The Phantom*, reaches the wrecks and more distant sites faster than the average dive boat.

Due to its central location, Tavernier Dive Center provides divers with a great deal of diving variety. Every dive is something unique, from shallow reefs inside the park, to deeper, more dramatic ledges and wrecks outside the park.

OCEAN QUEST DIVE CENTER

Ocean Quest Dive Center offers 50 dive sites from Pennekamp Park south to Islamorada to keep avid divers busy. Plus divers will enjoy dozing on a sandy beach, playing tennis, eating at an excellent restaurant, swimming in the pool, sipping a cold drink under a tiki and listening to live entertainment at a lounge.

Ocean Quest is a complete PADI 5-Star Instructor Development Center located in Plantation Yacht Harbor Resort. The property's 50 acres offer all the amenities for a diver's dream vacation—without the crowds. Professional, personalized service and value-packed dive packages are their specialty.

BUD n' MARY'S DIVE CENTER

Do you have a small group? Bud n' Mary's, located in a cozy little corner at the south end of Islamorada, caters to small dive groups. They will arrange group excursions, plus they offer special rates for parties of divers.

This PADI/NAUI facility features everything from rental gear to quality sales and service to

day and night dive trips. The dive boat leaves from the docks of Bud n' Mary's Marina, which is a plus. Serious divers can hop aboard and be at the reef in a matter of minutes.

Diving Marathon

Many divers looking for something new and different from the more popular sites of the Upper Keys have stopped in Marathon on

their way south to Key West. Consequently, they have discovered the remarkable underwater paradise of the Middle Keys which is often overlooked by others. A well-kept secret, underwater Marathon has lush colorful landscapes, beautiful tropical fish and variety without the crowds. What was once a little fishing village is today a bustling community that has grown into a tourist mecca. The city offers a

A friendly turtle swims from the nearby currents of the Gulf Stream along the reef line to join the company of a diver.



PHOTO BY LINDA REEVES

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complete assortment of hotels, motels, restaurants, a municipal airport and an array of professional diving services.

THE DIVING SITE

The Diving Site offers the perfect introduction to the delightful diversity of the Middle Keys. Bob Tilman began his full-service operation almost two decades ago. Bob and his son Rob know the area inside and out, both topside and under water.

Marathon diving can leave you with some intense impressions. Just imagine fantastic sponges, brilliant-colored soft and hard corals, lobster, big fish and exciting shipwrecks!

Marathon's *Thunderbolt* was intentionally sunk as part of the Florida Keys Artificial Reef Program, which was spearheaded by Bob. *Thunderbolt* was used during World War II to lay cable for mining operations. It is one of the most exciting shipwreck dives in the Florida Keys.

ABYSS PRO DIVE

Abyss Pro Dive is located at the newly refurbished Holiday Inn. Packages are available for dive vacations which include trips to

the area's reefs and wrecks aboard the center's roomy 34-foot six-pack dive boat.

Diving the Lower Keys

Southwest of Marathon at the end of Seven Mile Bridge is Big Pine, the northernmost section of the Lower Keys which ends in Key West. Big Pine is the largest of the Lower Keys and second in size only to Key Largo. Geologists say this section, which sweeps northward into the Gulf of Mexico, was built on submerged foothills of the Appalachian Mountains. Fossil coral and oolitic limestone form its base.

The area contains many plant and animal species found no other place in the Keys. Primary home of the tiny endangered Key Deer, Big Pine Key holds stands of tall pine trees, natural hardwood hammocks and many native plants, animals and birds.

Many divers think the Looe Key National Marine Sanctuary, located six miles offshore from Big Pine, has some of the most unique coral and marine life species in the Keys. The sanctuary protects a unique coral reef formation just inside the Gulf Stream that supports a teeming, thriving ecosystem.

Named after British frigate *H.M.S. Looe*, which ran aground and sank here in 1744, the

sanctuary covers 5.3 square miles. A string of mooring buoys, placed to help prevent anchor damage to the marine environment, mark the site.

Looe Key Reef is approximately 1,000 yards long and 200 yards wide. The waters are rich with big groupers, barracudas, angels, turtles and much more. Many unusual coral species can be found in the reef system. Large clusters of staghorn, elkhorn and brain corals stand in underwater gardens. The ocean floor contains a remarkable variety of marine life for diving excitement.

Diving Key West

When most people think of Key West, they think of beautiful palm trees, emerald-green water, sun, fun and paradise. In the past, serious divers never ventured down as far as Key West. But in recent years, divers looking for new and exciting places have discovered Key West. The impressive coral formations, mysterious shipwrecks and schools of tropical fish scattered in the waters of Key West are virtually endless.

Beginning at Sambos and continuing 45 miles westward to the Marquesas is a series of spectacular coral reefs full of many varieties of hard and soft corals, large sponge species and

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How To Get There

Whether you are flying, cruising or driving to the Florida Keys, getting there is simple.

Several commercial carriers offer scheduled flights daily to both Key West and Marathon from Miami, Fort Lauderdale and Orlando. Flying time is approximately 45 minutes to Key West and 35 minutes to Marathon.

Cruise ships also sail regularly to Key West. Cruise lines that make the route include Celebrity, Dolphin Cruise Line, Holland America, Majesty Cruise, Norwegian Cruise and Regency Cruise.

By land, travel south on U.S. 1 to Key Largo. If you are driving from Miami International Airport, take LeJeune Road south to 836 West, going to Turnpike Extension, then south to U.S. 1 and the Keys.

WHEN TO GO

Diving can be excellent any time of the year, but the best time for good diving conditions, fewer tourists and off-season rates is summer. Generally, the summer season brings bright sunny days with temperatures averaging 80-90 degrees and the seas are usually calm, warm and crystal clear.

Dress is casual. Light cotton clothing including t-shirts and shorts are accepted as the norm.

Rental dive gear is available throughout the Keys. Bring a C-card and log-book in order to charter a boat or to purchase air.

Year-round water temperature is warm. Temperatures rarely dip below the 70s in winter. If you plan a trip in the winter, however, you may want to bring a light wetsuit for protection.

REEF ETIQUETTE

Most dive shop operators encourage visitors to treat the unique environment of the Florida Keys with respect. Be careful when diving near a coral reef. Look but don't touch. Don't use a speargun in the sanctuary and other restricted areas. Remember, the Keys' ecosystem is one of America's precious natural wonders and it belongs to all of us.

SPECIAL ADVERTISING SECTION

exotic collections of fascinating sea creatures. One word that might describe the diving here is variety. On the Atlantic side the shallow reefs slope seaward to depths exceeding 150 feet. Most of the inner fringe reef systems range from five to 25 feet. On the Gulf side, shipwrecks are scattered in the crystal waters on the shallow ocean floor.

Finally, Key West is a point of departure for the Dry Tortugas, the Marquesas and other out islands in the Gulf of Mexico where shelling, sightseeing and lobstering are excellent.

KEY WEST PRO DIVE SHOP, INC.

Key West Pro Dive Shop, Inc. was founded in 1972. Not only is it the oldest dive shop in Key West, but it has also been dubbed the "favorite dive shop in Key West" by one of the town's radio stations.

As Key West boomed over the years and more divers discovered the area, the shop expanded to keep up with the needs of visiting divers. Today, Key West Pro Dive is one of the largest, most comprehensive dive shops in the Florida Keys, known for its full-service dive store, charters, specialty dives and scuba instruction.

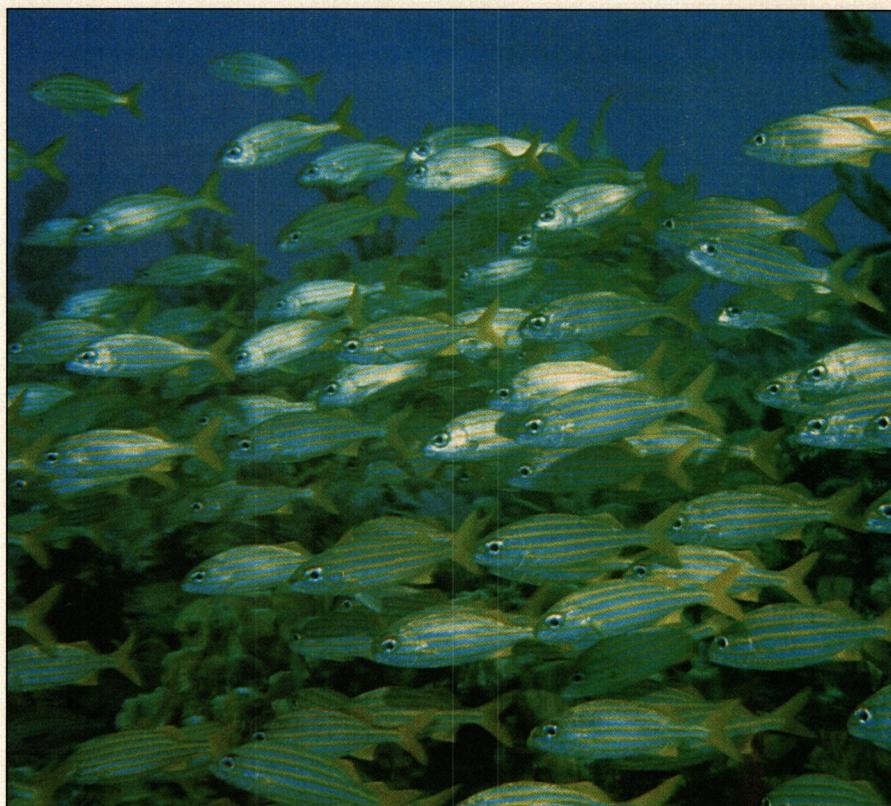


PHOTO BY LINDA

A school of reef fish is stacked over the coral like layers of a cake.

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PHOTO BY LINDA REEVES

Sunset along the winding mangrove channels of the Florida Keys.

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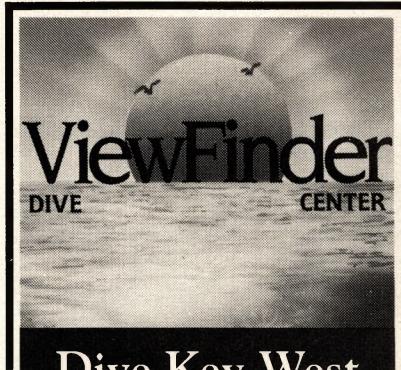
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SOUTHPOINT DIVERS

For vacationers who want to make the most of their Key West dive trip, Southpoint Divers offers fast shuttles to and from the dive sites aboard the newest and fastest dive boat in the Florida Keys. The Pro 42 Custom Jet Boat is presently the only dive boat of its kind in the United States. Operating on a jet drive system, it can carry 15 divers and travel at speeds up to 24 knots. Divers are quickly zoomed off to the reefs and skyrocketed back to the docks in time for some of the topside excitement the city has to offer.

VIEWFINDER DIVE CENTER

You can choose from a wide assortment of dive services in Key West to get you to the reefs. Viewfinder Dive Center features "diver only trips" (no snorkelers) for beginner and novice divers as well as experienced divers. They specialize in certifications, having certified more than 600 divers, and offer a full-service retail store. Viewfinder is a PADI 5-Star Instructor Development Training Facility, offering classes for the non-diver to and beyond the instructor level.



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NEW ORLEANS, LOUISIANA

Beneath the oil rigs divers encounter wildlife not found on any Bourbon Street tour map.

BY DAVID TAYLOR

Now, Boudreux, dis here be an oil rig," my Cajun dive buddy tells me as we nose up to a Chevron platform in the Louisiana gulf, lash our boat to a strut dug deep into the oil-rich bottom, and get ready for a diving *fais-dodo*. That's Cajun for "party," thought to be a genetic predisposition for many in New Orleans.

A bunch of us Boudreux's and Thibodaux's (good ol' boys) have motored out 30 miles from Port Fouchon to get past the "rip"—a line of sargassum seaweed that marks where the mighty Mississippi pushes fresh water into the Gulf. Once past the rip, the muddy emerald water explodes into ice blue, washed clear by an underwater river called the Florida Current, a tributary of the Gulf Stream. Sometimes the rip is only a few miles offshore when the river is low, but the Great Flood of '93 has swollen the river to record heights and pushed the rip way out here.

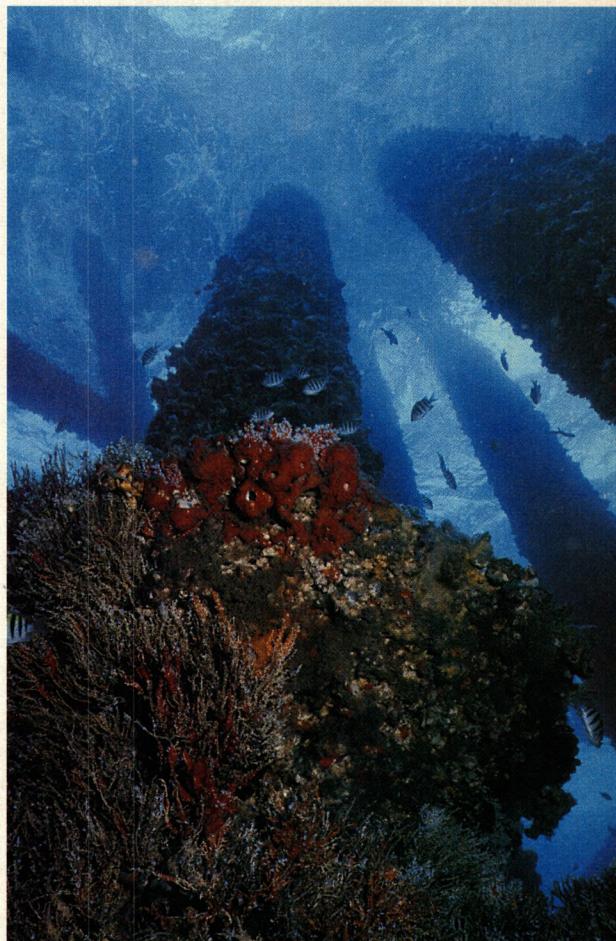
"Here" is the Circle Rigs, a ring of 15 oil platforms in the Gulf's South Timbalier area, a mere handful of the 3,400 drilling rigs remaining offshore Louisiana. The National Energy Commission estimates that 40 percent of them will be gone by the year 2000, a prediction that gave birth to this state's first artificial reef program in 1986 and alarmed both sportfishermen and underwater hunters.

Why? To spearfishermen, these rigs have become shrines, high holy places with an almost mystical draw for them and the fish they come to do mortal combat with. Very big fish. By the end of our six dives that day (three tanks per diver), the hold of our boat was brimming with black drums and cobia in the 50-pound range, mutton and red snappers at 40 pounds, and a seven-foot barracuda with still enough fight to try to bite anybody who came near it even after 10 minutes of lying in the sun. Sever-

Past the rip, muddy emerald water explodes into ice blue, washed clean by the Florida Current.



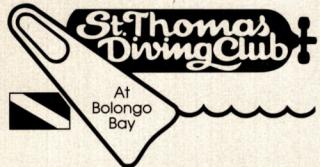
JACK-UP RIG IN LOUISIANA'S GULF (ABOVE);
BENEATH THE PLATFORM, EACH PILING
BRIMS WITH LIFE (ABOVE RIGHT).



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Dive In

During the summer months, you have a 90 percent chance of seas good enough for a trip to the rigs, where you will find visibility in the 50- to 200-foot range. Water temperature averages 75F during this season, with days of 80F and 90F. Expect little, if any, thermocline.

During the winter months, operators offer only a 50 percent chance of going rig diving. The payoff is consistent 100-foot vis (no plankton blooms) and bigger fish, which follow their prey to warmer inshore waters. Water temps range from the mid-50s to low-60s. Pack your quarter-inch wetsuit and be prepared for current and thermoclines.

Regardless of water temp, bring a Cajun wetsuit (dungarees and work shirt) to put on over your expensive exposure suit—the barnacles on the struts will chew it up. Gloves are a must.

If time permits, consider taking a Rig Diving Specialty course, which includes instruction in boat-diving skills, rig characteristics and rig diving procedures. The Underwater Hunter Specialty course focuses on safe use of the banded speargun, basic stalking and shooting techniques, and state fishing laws.

Two-, three- and four-tank dives average \$65-\$85, with tanks and weights extra. Only The Scuba Company provides free transportation for the two-hour drive from New Orleans to the coast. All shops offer a full line of rental equipment.

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al hundred pounds of fish in all.

"We had a good day," says Charlie Romano, skipper of our charter *Insanity* and Louisiana's spearfishing record holder in the miscellaneous category—a 753-pound sunfish that had to be lifted onto the boat by an oil rig's crane. "But I'll tell you," he continues, "these days the really big fish are just about gone."

Like many underwater hunters, Romano's disgust with the waste and greed of the commercial fishing industry has turned him into an angry ally of the environmental movement. "There are over 200 long-line boats licensed to fish the Gulf, only about 100 spearfishermen," says Romano, holder of several NOGI rodeo trophies. "In one hour a commercial boat can take as many fish as I have in my entire life. Today, 15 years later, I regret shooting that sunfish. I've learned that spearfishing is a right and a responsibility."

Pure hunters like Romano spend a lifetime perfecting their stalking and shooting skills. "Spearfishing is about being a true sportsman," explains Harold Baquet, our divemaster who also teaches an underwater hunter certification course at The Scuba Company in New Orleans. "You have to know the behavior of the different fish, be able to blend into their environment, even disguise your intentions and movements in order to get a good shot in the kill zone."

The hunters I watched were also expert divers: at home in the water, acutely aware of everything around them, and brave. The big fish often hang out at 120 feet just above a miasma of murk created by the drilling powder that mixes with seawater at the bottom of each rig. Spearing anything weighing three digits can mean a ride into the murk, not to mention a fight on the way up to the boat with a fish biting and flailing for its life. Indeed, I watched one hunter who had to be freed from his own lines after a cobia wound them around his neck. "Intentional?" I asked back on the boat. The Cajuns just smiled, knowingly.

But oil rig diving is about more than spearfishing. On the boat with us were PADI students earning certification and the first amateur underwater photographer I've seen with a Nikons RS. Baquet, (*Continued on page 107*)

SAN MARCOS, TEXAS

Giant prawns and blind salamanders are just part of the freshwater freak show in this Texas Hill Country drift odyssey.

BY PAUL KVINTA



e come upon them suddenly as we snorkel, an entire school clustered on the surface and along the river's southern bank. "That's a 250-pounder, easy," my buddy whispers. I nod, fixing an uneasy gaze on the group's most impressive specimen.

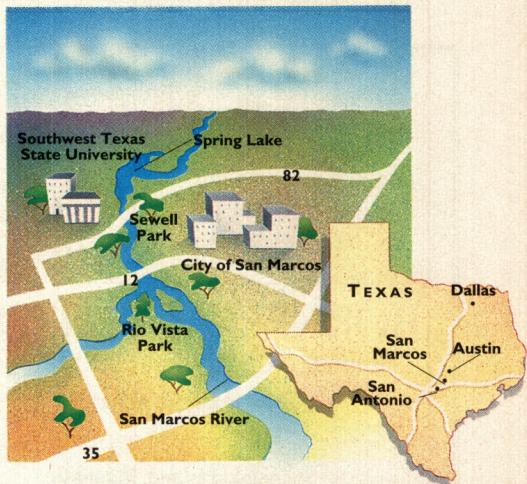
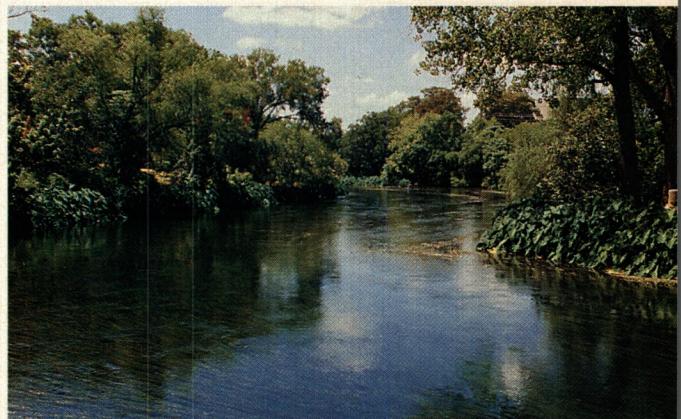
My watch reads 20 minutes to midnight, and thick cloud cover has left the San Marcos River in pitch darkness. We slowly fin backward and downstream, preferring the central Texas river's lurking unknown to the terrifying creatures assembled before us.

"D u u u - u d e !!!" one of them bellows, shattering the night air and alerting the group. They've spotted us, and we freeze—*Homoerectus fraterneous intemperous*, the Drunken Texas Frat Boy. Some lie half-passed-out on black rubber inner tubes in the water; others stumble and splash, clutching their Lone Stars. We gawk at each other like species from different planets—us, in full wetsuits and masks with fluorescent light sticks dangling from our tanks; them, in backward baseball caps and oversized T-shirts detailing how beer is better than women.

And then, unexpectedly, they turn away, leaving us be. Obviously, we're not the first midnight frogmen the students have witnessed drift-diving the remarkably clear river that gently ribbons through Southwest Texas State University's postcard-perfect campus. Plenty of divers have negotiated this current before, seeking a rare glimpse of a nocturnal character far more fascinating than bloated fraternity brothers—*Macrobrachium carcinus*, the giant freshwater prawn, possibly the strangest of the quirky collection of wildlife prowling the upper San Marcos.

Nestled in the heart of the rolling Central Texas Hill Country, the San Marcos River gurgles to life from limestone springs in the middle of the relaxed college town bearing its name. Four miles below the springs, the San Marcos merges with

PHOTOGRAPH BY PAUL WATZLAVICK; MAP BY KAREN MINOT



the Blanco River, and flows south-easterly for 78 miles to its confluence with the Guadalupe River. Beyond its union with the Blanco, the San Marcos resembles a typical central Texas river. But the brief upper San Marcos, with its voluminous water flow (292 cubic feet per second) and constant temperature (72F), supports a virtual circus of exotic flora and fauna, with several endangered species seldom found anywhere else in the world: inch-long fountain

AFTER WINDING THROUGH CAMPUS, THE SAN MARCOS (ABOVE) FLOWS THROUGH TWO QUIET PARKS. THE RIVER'S GIANT PRAWNS (ABOVE LEFT) CAN GROW TO A MONSTROUS 20 INCHES.

darters, slithering freshwater eels, San Marcos salamanders, aquatic fields of Texas wild rice, and giant prawns, which can grow up to 20 inches.

The river's conditions stem from its unusual source—the 175-mile-long Edwards Aquifer, a subterranean stretch of porous, water-bearing limestone that fuels the San Marcos and provides drinking water for residents from Austin to San Antonio.

In the aquatics lab of Glenn Long-

ley, director of the university's Edwards Aquifer Research and Data Center (which sits near the river's origin at Spring Lake), we ogle a tiny, four-legged albino creature with no eyes, helplessly paddling about in a small aquarium. "The Texas blind salamander," Longley explains. "They never see the light of day." While some very unique specimens inhabit the temperature-controlled San Marcos, the truly outrageous characters dwell with-

in the underground aquifer itself, where neither man nor sunshine can venture. This dungeon of misfits includes the widemouth blind catfish, the toothless blind catfish, the blind shrimp and the Texas blind salamander.

Longley pulls a specimen jar off a shelf to show us a dried, 15-inch prawn with long, narrow pincers. Commercial fishermen seriously depleted the giant prawn population during the late 1800s, and although the animal is no longer harvested, its numbers have never bounced back. Longley attributes part of the problem to dams built along the Guadalupe River, which block the prawn's return home after its annual spawning in the Gulf. But the fact that the animal continues to exist at all in the San Marcos reveals something more amazing about the prawns than even their size. "There's no indication that they can breed in freshwater," Longley says. "They would have to get out of the river during their return upstream and walk around those dams, which apparently they can do."

We suit up at 10:30 p.m. beneath a canopy of ancient oaks near the waterfall that rushes over the spillway bordering Spring Lake. Earlier in the day, we had hugged the river bottom and forcefully finned under the falls to explore three concrete chambers beneath the dam, where elusive freshwater eels reside. Although we saw none, we did witness schools of blue gill and perch pecking at the fossilized rams' horn snails that blanket the river bottom in search of tasty morsels from Pepper's restaurant, a student hangout built over the spillway.

But tonight, we concentrate on prawns. Submerging into the shallow six- and eight-foot depths around the falls, we follow the rocky ledges along the bank, training our spotlights on the nooks and crannies that the hungry rascals will likely emerge from after a day's worth of hearty burrowing and snoozing. There! One freezes in the light beam. And there! The prawns emerge slowly from their dens like hulking praying mantises, wary of the light, but unafraid. In a show of force, one extends his pincers menac-



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ingly. We flick the light off and on again, and they're gone. Too bad they're in such short supply. A foot-long prawn on a bun smothered with chili and onions would make a tasty after-dive snack.

The river teems with less exotic wildlife as well—small red crayfish, four types of bass, 55 species of perch and roughly 43 species of anchored and floating plants.

The river winds west through campus' Sewell Park and banks south through City Park, with depths varying between three and 12 feet. For a third of a mile, the current sweeps us over undulating forests of grasses that rise and fall in our spotlights. Schools of perch cruise with us then break away, and we bail out of the current to follow largemouth bass through the vegetation. Carp hang motionless under lily pads, forcing us to twist and twirl to avoid disturbing their eerie trance.

We drift under a railroad trestle and into Rio Vista Park, where depths reach 15 feet and an overgrown island occupies the middle of the river. The

Dive In

The Southwest Texas State University campus and the springs that give life to the San Marcos River are located in the town of San Marcos, midway between Austin and San Antonio. Take I-35 from either of those cities (south out of Austin, north from San Antonio) to the Hwy. 82 exit. You'll find the campus about a mile west of the exit.

Because of the constant 72°F temperatures, diving is year-round on the San Marcos River, although topside temperatures in central Texas can dip below freezing periodically from December through March. Visibility ranges from 25 to 40 feet over the river's first three-quarters of a mile, which is the best area to dive. Since giant prawns, freshwater eels and crayfish are nocturnal, plan for a night dive.

If you want to drift dive, it's best to bring two vehicles and park one at Pepper's restaurant near the falls and the other at Rio Vista Park.

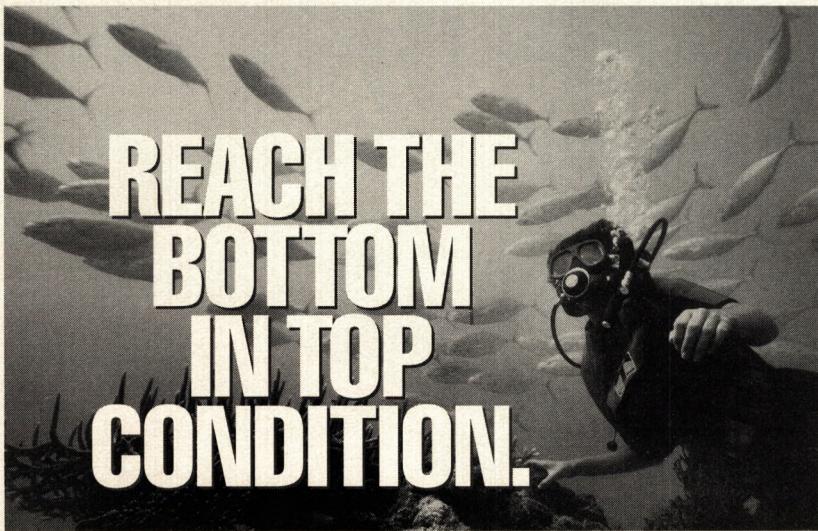
Currently in San Marcos, only the Dive Shop, located about a mile from campus on Ranch Road 12, offers equipment rental and river information. For more information, call (512) 396-3483.

island signals a good stopping point since visibility beyond it decreases. And Rio Vista is actually better to visit during the day when packs of mossback turtles, ranging in size from silver dollars to shoe boxes, sun themselves atop clumps of lily pads.

The park also features the San Marcos River's primary cultural wealth—scores of Native American stone tools covering the river bed around the island (locals quickly

remind divers to leave these artifacts in the river after examining them). Researchers believe nomadic bands of hunters and gatherers camped regularly along the San Marcos 11,000 years ago, fishing for perch and bass. No doubt they stalked giant prawns as well. Maybe they even drank beer. ☺

Atlanta-based freelance writer Paul Kvinta spent his college years in Texas, but never joined a fraternity.



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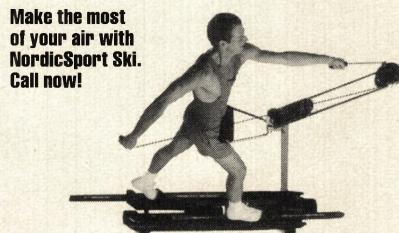
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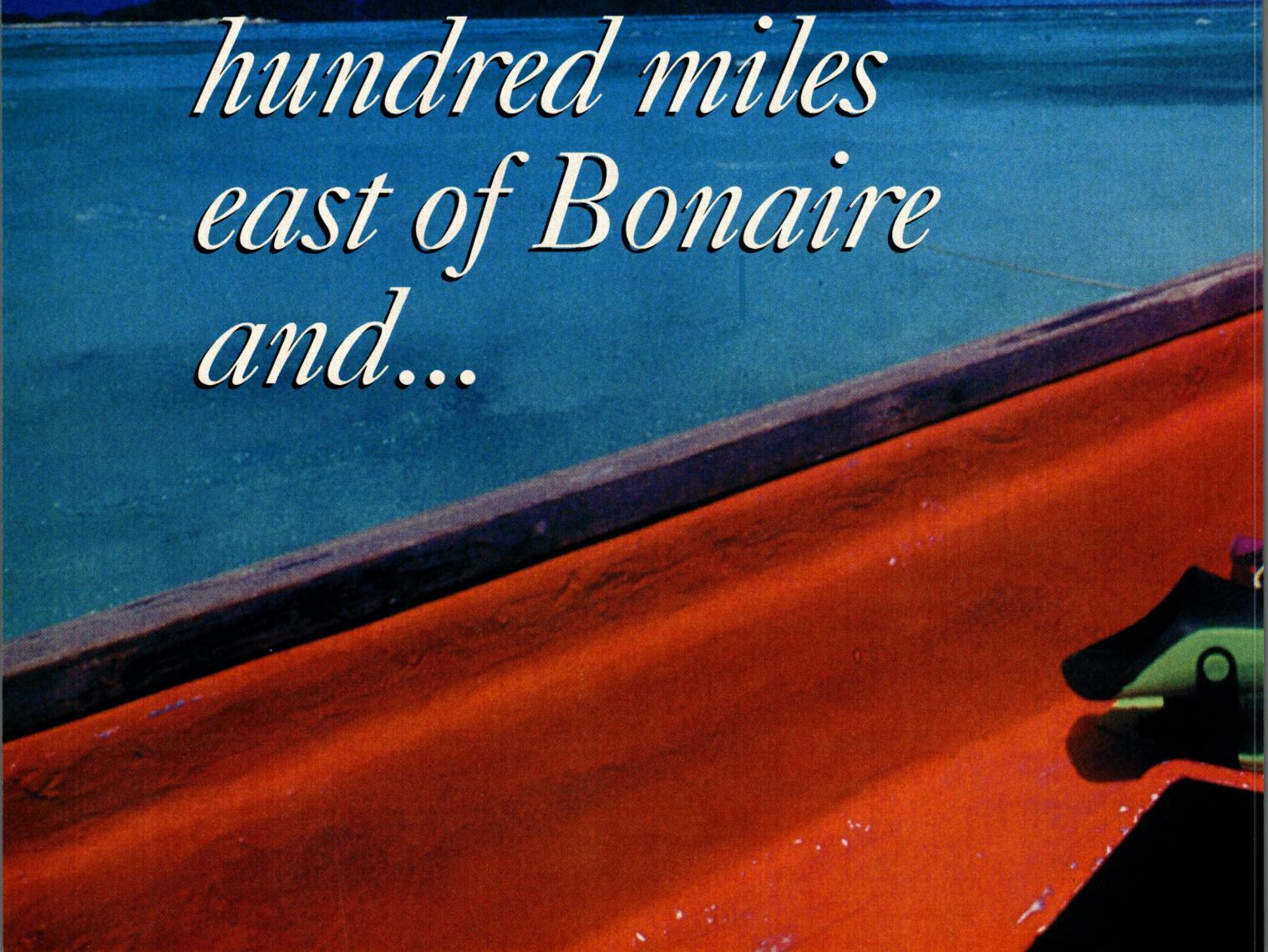
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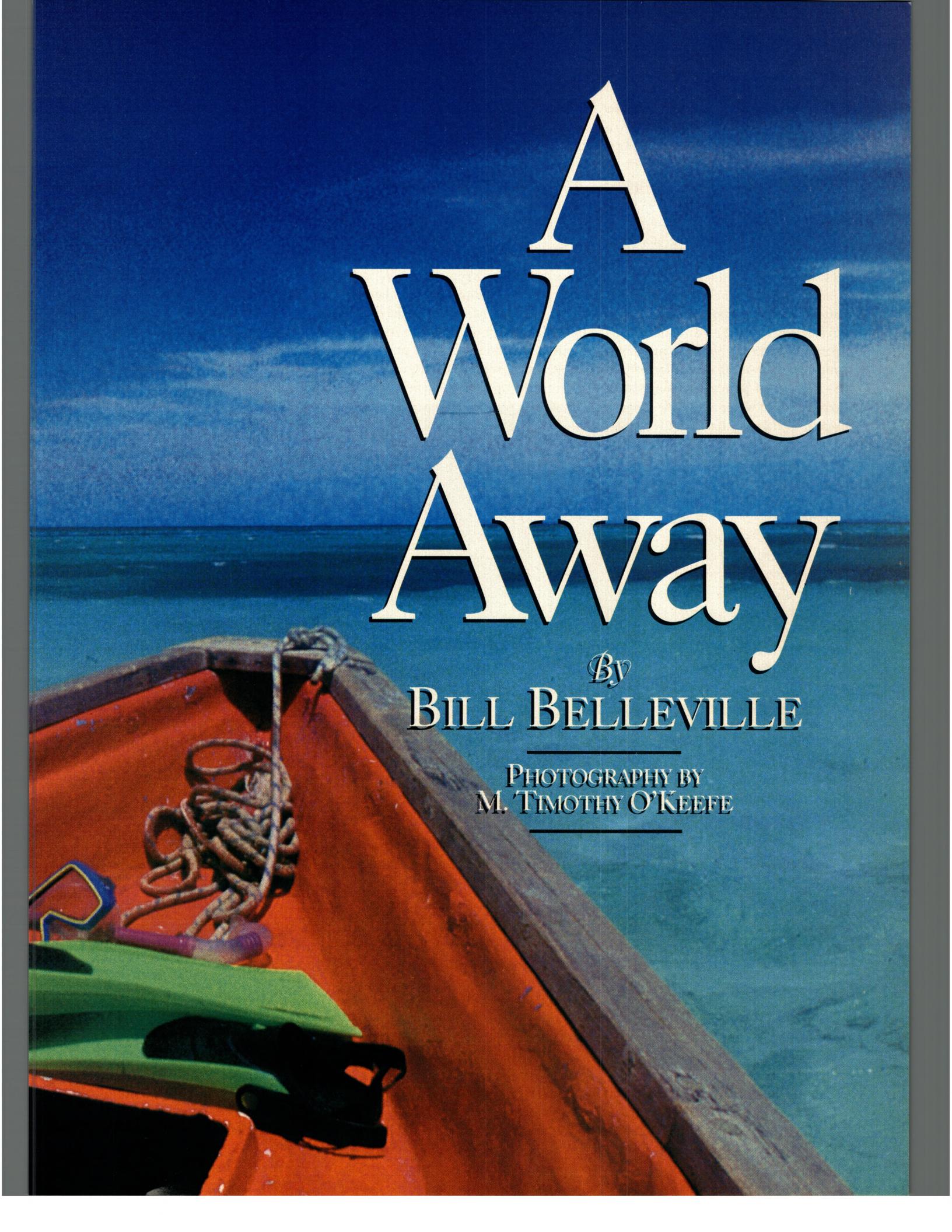
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Venezuela's
undeveloped
Los Roques
islands are a
hundred miles
east of Bonaire
and...



A World Away



By
BILL BELLEVILLE

PHOTOGRAPHY BY
M. TIMOTHY O'KEEFE

L

ime has vanished here in the remote Venezuelan island chain of Los Roques. But then so has our native dive boat captain José—with the *Amor de Madre* tattoo on his forearm and *cerveza Polar* in his hand—who bid us *adiós* as we splashed backwards from the gunwales of his open fishing boat. Now, as my depth gauge inches past 100 feet, I look up to see the hull of José's wooden *penero* floating in the water above me, as clear as if I were back on the beach and it were another cloud in the sky. And, really, I know that José is up there too, just this side of the cumulus, waiting.

As for us—photographer Tim O'Keefe, our Venezuelan guide Frank Ibarra and me—we drift along in the five-knot current next to the mini-wall with its seven-foot gorgonians and bright orange elephant ear sponges and coral caves, twitching our fins as if they were overgrown pectorals to dip or turn in the water column. I am in a place that two weeks ago I didn't even know existed: an isolated archipelago of bucolic limestone islands, red mangroves, white beaches and plunging coral walls washed with the clean oceanic waters of the southernmost Caribbean Sea.

Back home, my atlas charted Los Roques as a few mere dots scattered 106 miles north of Caracas, and guidebooks warned of "no opportunities for scuba diving." Yet here I am, poking about between the few known dots, having long ago traded in my knowledge of familiar and worn geography for the promise of discovery.

Actually, if we're counting dots, the islands of Los Roques should add up to about 350, strewn about to create a kidney-shaped lagoon of a half-mil-

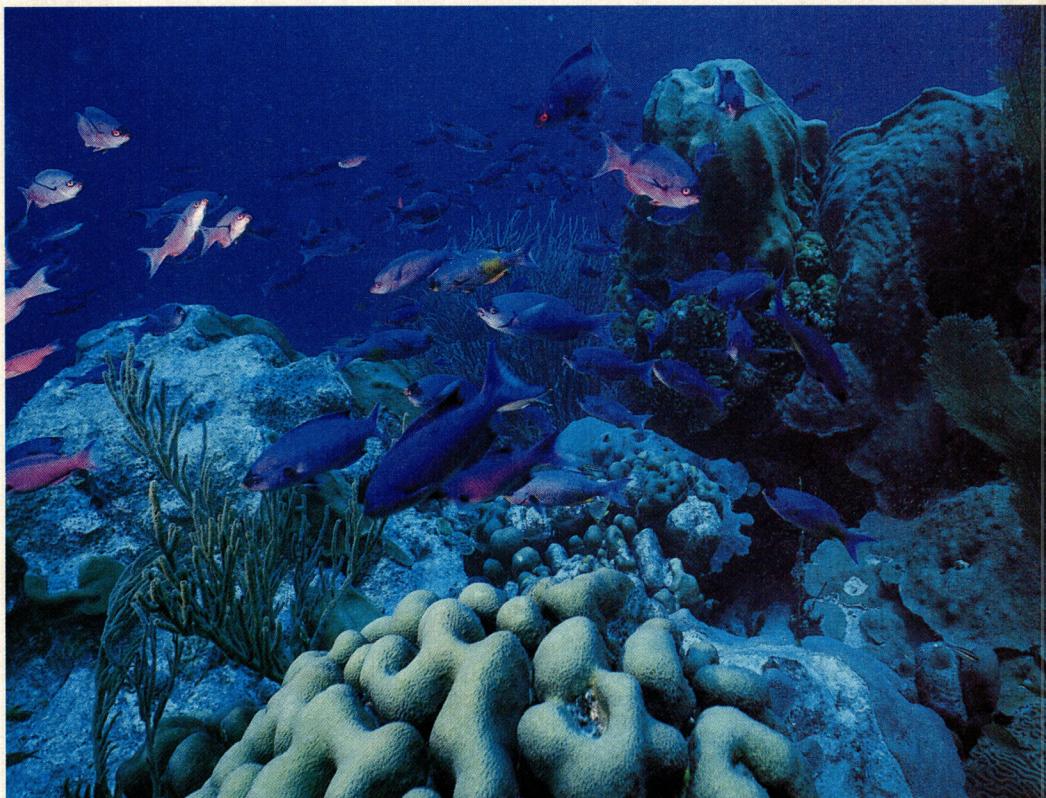
lion acres on a latitude between Bonaire and Grenada. Taken wholly, the *Parque Nacional Archipiélago de Los Roques* is one of the Caribbean's largest and oldest marine parks, protected since 1972.

Here swimming in the rich food chain of these waters are sea turtles and giant lobsters, pods of bottlenose dolphins and sleeping sharks. Ten-pound silver bonefish sweep the grassy shallows with their tails, stirring up benthic shrimp and crabs. Beneath the crumbling lighthouse on the main island of Gran Roque huddle village *casas* with crushed-shell walls and turquoise shutters thrown open to the generous trade

spin of romance, although God knows they've tricked me often enough before. I know because O'Keefe has the pictures to prove it, and, most of all, I know because José was drifting just this side of the clouds, following our bubbles Cozumel-style, and motored over to pick us up when we surfaced—same tattoo, different beer.

ROCK OF AGES

Frank Ibarra is an American-trained engineer who loves the water and fishing so much he decided to make a living guiding anglers into the Venezuelan Amazon, across the open waters of the Caribbean, and sometimes to the



winds. On the *playa*, deeply tanned fishermen weave new seines, their hand-built fishing boats beached just above the high tide mark. At the village square, a wall mural of a blue-eyed mermaid watches over barefoot children playing marbles and hopscotch in the dirt streets.

Indeed, this is a place far outside the dots, a place that might not even exist, except for just now. But Los Roques with its provincial charm and clear waters does exist. I know because my senses are not yet immune to the

offshore islands of South America. When I first called him he told me about the jungle where white freshwater dolphins frolic in the wake of fishing boats on the Ventuari River.

And he told me about the islands of Los Roques, where only a handful of divers and anglers—mostly Latino and European—have ventured over

CREOLE WRASSE AND DAMSELFISH FLIT ABOVE A SHALLOW REEF (ABOVE), WHILE DEEP-WATER SEA FANS ADORN A SLOPING WALL (TOP RIGHT). GRAN ROQUE'S STREETS REMAIN UNPAVED (RIGHT).



the last few years.

Ibarra also gave me the bottom line on the two choices: "Now is the dry season. And in the Amazon, the piranha will share the same deep holes with the dolphin. Good for the piranha, maybe not so good for us." Never keen on becoming anyone's dinner, O'Keefe and I opt for a night in ravenous Caracas before heading offshore to Los Roques.

The next morning, once beyond the cloud-tipped Andes that plummet into the Caribbean, the tallest of the Los

Roques islands, Gran Roque, soon heaves into view—a chunk of weathered igneous rock that melts into a plateau of sand-covered limestone, spreading out to green tropical flats, ocher-inflamed coral and beds of sea grass.

The ancient volcanic eruption that brought Gran Roque up from the depths laid down a bed of lava during the Pleistocene era, creating a hard bottom for the floating larvae of coral to anchor. Ten thousand years of flourishing piled calcium carbonate everywhere but the very top of Gran Roque, forming a

Los Roques' backwater charm is beguiling—but only to those who don't expect it to be more than it is.



THE FLUORESCENT
PIGMENTS OF THIS
YELLOW TUBE
SPONGE, PLAYING
HOST TO AN
ENCRUSTED SEA
FAN, GLOW BRIGHT
EVEN AT DEPTH.

Club, its spartan but clean rooms arranged inside whitewashed courtyard walls. Still firmly rooted in the natural rhythms of the sea, this rustic fishing village of a thousand souls seems to tolerate the handful of foreign visitors who find their way here.

From the dining room of El Pelicano, I watch the sun set through massive glassless windows while scores of boobies, terns and pelicans dive into the sea for their dinners. The scene is interrupted only when Saul Wainschtein, who operates the cay's lone dive shop, steps through one of the windows—*Buenas tardes!*—and into the dining room to assure me that we're all set for tomorrow's diving. That night, in a tiny room under a cool ocean breeze, I dream of swimming through coral windows with tiny piranha at my side, their

necklace of coralline cays in the midst of Windex-blue water.

On Gran Roque we settle into a small inn with the grandiose name of *El Pelicano*

Later in the week, we will stop between dives for lunch on Cayo dos Mosquises Sur, where the nonprofit conservation agency Fundación Científica Los Roques (FCLR) maintains a field station. There, among tanks of young sea turtles raised from eggs, I will learn that poaching of turtle eggs and overfishing of conch and lobster are still major conservation problems, even in these isolated cays.

At this morning's dive site, offshore a high sandy island called Boca de Cote, José throttles back the twin Yamahas to a gurgle and soon we're

teeth snapping like castanets.

SO MANY ISLANDS, SO LITTLE TIME

Our 28-foot *penero*, peaked at the bow like a dory, splashes us south across the vast lagoon. Stretching out before us to the horizon are the 300-plus islands of Los Roques, only 40 of which are actually named. Most are little more than mangrove wetlands, limestone and white-sand beaches—a vision of the Florida Keys a century ago before they were dredged, filled, paved and bridged.

Soon we pass the islet of Rabusqui where the bull sharks like to snooze. Ibarra says the shallow ridges of sand

and turtle grass are prime bonefish territory. I look beneath the transparent water and watch the color green flash by in all its known incarnations. Although park rules—based on zoned uses, as in most marine parks—have restricted houses to only four islands, I see at least five temporary camps where fish and conch dry on lines between sheds of driftwood and tin, testimony to the vastness of the territory, meagerness of funding and difficulty of enforcement.

geared up and overboard. Swept along as we descend by the five-knot current that washes into the lagoon, we sail over a steep wall that begins with stair steps of plate corals just like in Bonaire, which is, after all, only 120 miles away.

Like most of the outside sites here, the wall flattens into a broad plateau at 200 feet before plunging down to a thousand-foot bottom. Since the best and brightest of marine life is in the upper regions, I stay between 60 and 80 feet.

Midway down the wall, sea whips taller than me reach toward the surface light, their polyps extended to feed in the same current that ferries us past. Tropicals dart everywhere—dusky damsels, peppermint gobies, a prison-striped juvenile French angel. When a Nassau grouper lumbers out of a cleaning station a few feet below, I drop down for a better look and through an opening in the coral catch the unmistakable green of a moray at least a foot wide. I notice we're being escorted by a trio of yard-long barracudas; later, Ibarra tells me that a five-footer spent the entire dive just above my head. My last thought before ascending is that the clarity here defies laws of physics: primary colors usually lost at half this depth are still present, glowing in the sunlight like a hallucination.

BLACK LIZARDS, INDIANS AND THE PUFFER SITUATION

Ashore on an uninhabited cay, we lunch on Spanish mackerel steaks from last night's dinner, mangoes and Coke in the shade of a fisherman's shed. Beside us are piles of empty conch shells bleaching in the same sun that also warmed the Indians who once sailed and fished these waters. Archaeologists from the FCLR have found pre-Columbian sites on 56 islands in this chain, representing seven different groups. Before vanishing into a black hole of history, they left behind middens of conch, fish bones and turtle shells, red clay bowls and vases shaped into the likenesses of their gods. But today our only companions are the fat black lizards endemic to these islands.

On the afternoon dive, we continue our drift odyssey at a nearby site,

past massive colonies of reef-building star coral, hulks of brain coral on narrow ledges and azure vase sponges upholstered in an ethereal blue. A rainbow parrotfish noses about, scraping algae off coral with its beak, while a small sharpnose pufferfish half the size of my hand paddles by. Around the next corner, I'm surprised by five large smooth puffers—more than I've ever seen together. Also surprising, they're totally unafraid of me, a clear sign of this place's isolation from the diving mainstream and thoughtless divers who terrorize fish for fun.

The next afternoon, we fight our way up current to the edge of a cave at 60 feet and slip inside its protective lee. There, even in the dark corners, life still bristles: orange sieve encrusting sponges cling to the walls, a coney flits away, splitting a thick school of blue chromis. Massive gray angels flip their bodies sideways, showing off their girth.

Back outside, along the wall,

mounds of pillar coral are stacked atop each other like dunce caps for giants. I meander through a school of small fish I can't identify—light blue, tipped with a yellow nose and dark blue horizontal stripes. They move away from me and then back in perfect unison like blades of meadow grass in the wind. A Spanish mackerel, just like those we've been eating, pokes about, followed by an ocean triggerfish. Away from the wall at the edge of visibility, I see a school of bar jacks, wary and on the prowl.

I am reminded of what Paul Theroux once wrote: the most intriguing places are found at the very end of the worst roads. And so it is with Los Roques. The lack of luxuries keeps crowds at bay, allowing the fragile realities of this isolated archipelago to endure. Its Caribbean backwater charm is beguiling—but only to those who don't expect it to be more than it is.

That evening on Gran Roque, just before sundown, I climb to the top of

the worn volcanic mountain where the sad old lighthouse, *El Faro*, still watches, bereft of light. Below me lies the entire island, its cemetery of stone crosses and tiny houses for the departed spirits of fishermen, its sand streets full of barefoot children moving in schools like yellowtails in the magic of the tropical twilight. And suddenly I understand: Time does exist here, but it's a non-linear, pre-Nintendo time with little room for westernized demands or preconceptions.

If you want to know the time on Los Roques, look to the sliver of a crescent moon shining in the early night sky, smiling inscrutably like the blue-eyed mermaid in the village square, and know that time has never been anything more than a promise. ☀

Senior editor Bill Belleville is a frequent sojourner to uncharted dive territory.



KAREN MINOT

Dive In

LOCATION: The Los Roques Archipelago, located 106 miles north of Caracas in the Caribbean Sea, is Venezuela's largest group of islands—approximately 350, many unnamed and uninhabited—curving around a central lagoon approximately 120 miles east-southeast of Bonaire.

TOPOGRAPHY: Ten thousand years ago, volcanic activity split the seafloor open and gradually gave birth to this chain of lava islands, aptly called *los roques*, or "the rocks." Over time their sharp volcanic peaks have been worn by wind and rain into chunks of rock that give way to highlands of sand-covered limestone. Tropical flatlands sweep from the plateaus to white-sand beaches. Offshore, the same volcanic eruptions that gave Los Roques life also laid down the hard bottom necessary for coral larvae to establish colonies.

CURRENCY: The Venezuelan bolivar, currently trading at 94 to the U.S. dollar. Travelers checks are more likely to be accepted than credit cards, but be sure to carry bolivares for the many places that only accept cash. Exchange your dollars at the airport or the bank—you'll get a better rate than at a hotel.

LANGUAGE: Spanish. You'll find a smattering of English spoken in Caracas, but little on Gran Roque.

DOCUMENTS: For American, Canadian, British, New Zealand, Australian and Western European travelers, a valid passport and proof of round-trip air accommodations are required. Your airline carrier will issue you a tourist card, which is also proof of your return flight.

ELECTRICITY: 110 volts AC, 60 cycles—adapters are unnecessary. **CLIMATE:** Temperatures are steady, generally between 75F and 80F, except for August and September when they edge up to 86F; water temperatures follow closely. The Venezuelan rainy season from May through November has little impact this far from shore.

VISIBILITY: Generally 70 to 100 feet or more, depending on the tides and winds.

DIVING SKILLS: Wall diving in Cozumel-strength currents (up to five knots) is practiced at 80 percent of Los Roques's sites, so bring along your buoyancy and drift-diving skills. Classic shallow reefs offer the beginning diver a chance to fine-tune skills before taking a spin in the underwater wind.

GETTING THERE: Flying Aeropostal direct from Orlando to Caracas offers a nice alternative to the busy Miami International; customs

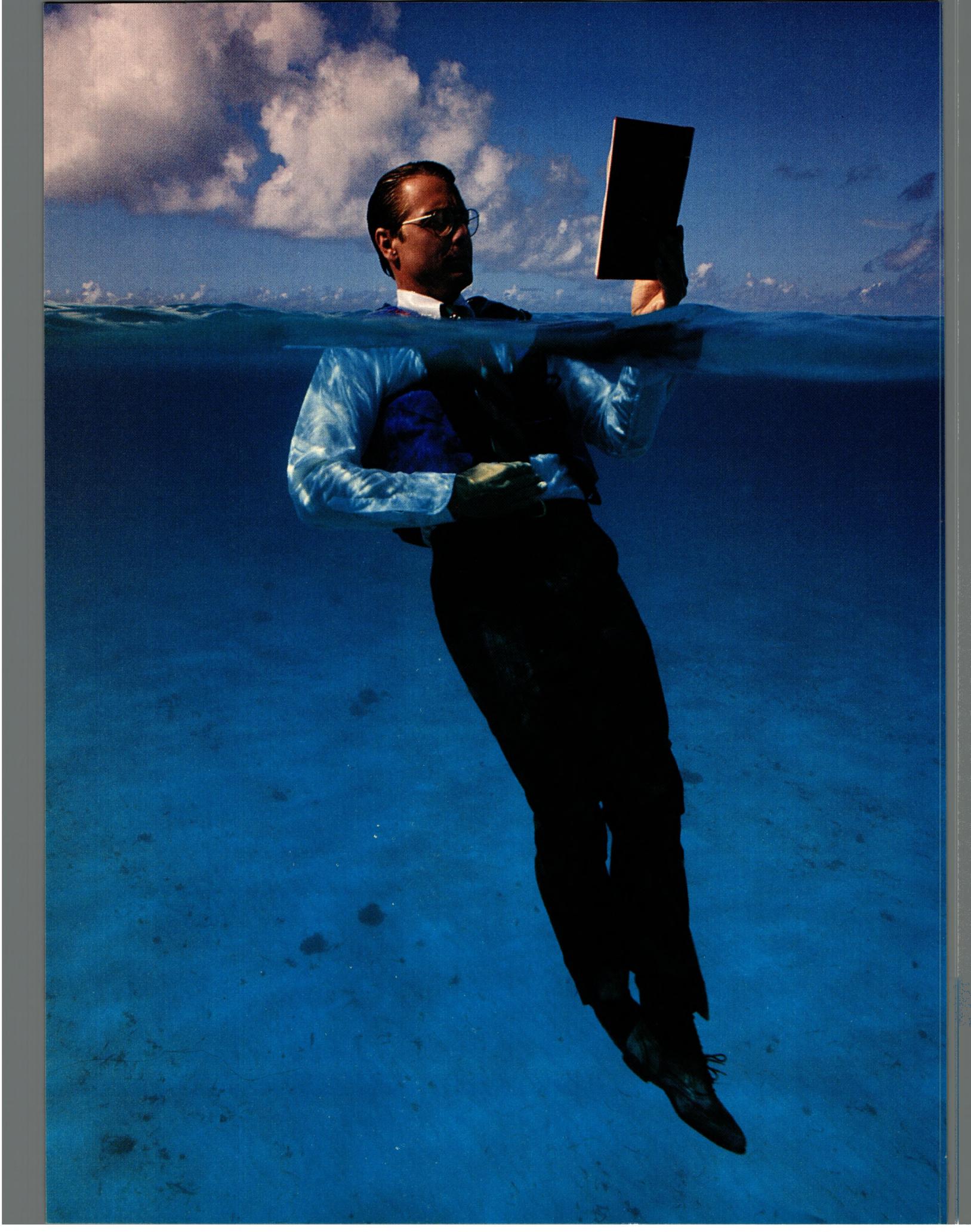
and immigration upon return are a breeze in comparison. Contact Aeropostal Airlines: (800) 487-0310 or (407) 850-0310. Other air-

lines flying to Caracas from Miami, New York and Los Angeles include American, United, Viasa, Air Aruba and Avensa. Once in Caracas, Aerotuy operates turboprop planes to and from Gran Roque daily, Tuesday through Saturday.

ACCOMMODATIONS: Gran Roque, the main island of Los Roques, is still very much of a laid-back fishing village with few of the luxuries mainstream dive travelers expect—AC, phone, TV or cars. There are six or seven low-key guest lodges locally operated on levels ranging from spartan to rustic charming.

DIVE PACKAGES: Your best bet is probably one of the seven-day packages Frank Ibarra has put together in the wake of our trip. They include airport transfers, arrival and departure one-night stays at the beachfront Sheraton Macuto outside Caracas, round-trip Aerotuy flights to and from Gran Roque, four nights on Gran Roque with three meals a day, tanks and weights for seven dives, plus options for night dives. Prices depend on whether you stay at El Pelicano (\$1,159 per person in a party of six) or the smaller, breezier Eduardo's (\$959). Costs increase by about \$200 per person if you book for only two people. The only other cost is international airfare. Call or fax Ibarra (011-582-979-2796); or write him in care of Pro Anglers International Service 9502, POBA International No. 100, P.O. Box 02-5255, Miami, FL 33102 or at his company's home office: Calle Ticoporo, Residencias Acuario, Piso 2, Apt. 22, La Ciudadela, Prados del Este, Caracas, Venezuela, South America.

FOR FURTHER INFORMATION: There is no Venezuelan Tourism Bureau in the United States but the Embassy of the Republic of Venezuela in Washington, D.C., has a tourism office. Call (202) 342-2214 (in the U.S.) for information; if you receive a recorded message be sure to leave your complete address along with a message detailing the information you want. Embassy staffers cannot return phone calls but will mail tourism information.



The *ABCs* of **BCs**

New models of buoyancy compensators offer faster inflators, lower profiles, improved lift, integrated air sources and funky colors. How does your BC measure up? By Jon Hardy

IN THE RELATIVELY SHORT time since they were introduced, buoyancy compensators (BCs) have evolved from empty bleach bottles to sophisticated air-handling systems (see “30 Million Years B.B.C.,” page 106). As a result, knowledge about how to buy a BC and how to best use this vital piece of life-support gear has remained a step behind the technology. Even experienced divers may not have the most current answers to some fundamental questions about BC selection and use:

- How much lift is enough?
- Exactly how much lift is lost through the compression of exposure suits at depth?
- How do steel and aluminum tanks affect buoyancy during a dive?

ROBERT HOLLAND

- Is a BC that floats you face-up at the surface better?
- How fast should an inflator put air in?
- How fast should a dump valve let air out?
- What's the real danger of out-of-control ascents and the best way to stop them?
- What's the best location for a remote dump valve?

While almost everyone has an opinion about these questions, there's precious little test data to confirm or disprove these beliefs. So we decided to create objective data by testing a wide variety of BCs in open-water conditions.

Our report will appear in three installments. This month, we deal with

How To Measure Your BC's Lift Capacity

If you have a BC but don't know its buoyant lift, here's a test you can conduct to determine it. In shallow water, with a line tied to the fully inflated BC (so you won't lose it), attach your regular weight belt securely to the BC. It should float easily. Now add small weights to your weight belt, BC straps or pockets or in a goodie bag attached to the whole set-up, making sure everything is secure. Do this until the BC just barely sinks. Take the whole thing out of the water and weigh the weights on a scale (dive weights are not always stamped with their actual weight); you now have the approximate lift capacity of the BC.

Then use the "BC Boost" worksheet to see if your BC is within a range that is appropriate for you.

of-control ascents.

In the next two installments, we'll evaluate the majority of currently available BCs model by model.

WHY BOTHER?

We're tempted to say "Because it's there." No one has ever done a thorough, methodical review of BCs. But the real reason is that your BC is actually more complex than your regulator, with twice as many valves, and more skill is involved in using it.

We also took on the job of demystifying BCs because there's just not enough reliable information available

for you to make an informed decision about how to choose and use your BC. Along the way, we're going to spear a few sacred cows, so we expect to hear plenty of controversy when these articles appear.

OUT WITH THE OLD

While the basic look of the BC hasn't changed much since the advent of the jacket style in the late 1970s, in fact, there are many differences on the inside. And these innovations make a

huge difference in how a BC performs. For example, older BCs were made in a limited range of sizes. However, divers come in an unlimited range of sizes. The result of this mismatch was, too often, BCs that fit poorly and would roll a diver over while under water or would bunch up around his ears while on the surface. Proper sizing is not just about comfort; you're safer in a BC that is the right size.

The newer remote exhausts require a caution: They work fine while you're

BC BOOST: How much lift do you **really** need?

Use this worksheet to estimate the amount of buoyant lift you require in a BC. After reading the explanations in the text (page 86), write down the approximate amount of lift you need for each step. Your combined total should fall between the suggested minimum or maximum—figures based on our testing and analysis.

As an absolute minimum, you need a BC with enough lift to exceed the combined weight of your weight system, your tank and the air inside it. However, while filling out this worksheet, remember that an estimation of your buoyancy needs will be highly individual and must be fine-tuned as you dive in different conditions and, especially, as your experience grows. Also, be sure to establish neutral buoyancy by performing a buoyancy check.

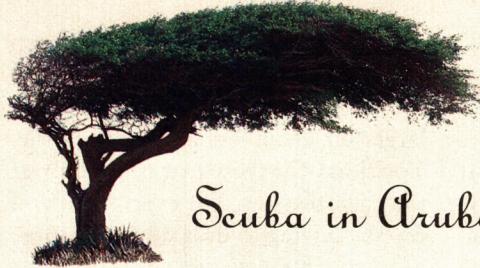
Diver with Little or No Wetsuit

	Suggested Minimum	Suggested Maximum	Typical Range	Your Personal Need
STEP 1 Estimate the buoyant lift needed to float you with your mouth comfortably above the water's surface.	4	8	4-8	
STEP 2 Estimate the buoyant lift needed to offset the weight of your scuba tank and compressed air. (See "Tank Table," pg. 84.)	2	15	2-8	
STEP 3 Estimate the buoyant lift needed to offset weight of game or objects carried.	0	6	0-4	
STEP 4 Calculate your subtotal by adding Steps 1-3.	6	29	6-20	
STEP 5 Calculate the buoyant lift needed to operate your BC at less than mid-inflation by multiplying your Step 4 subtotal by 2.	12	58	12-40	

Diver with Full Wetsuit

	Suggested Minimum	Suggested Maximum	Your Personal Need
STEP 1 Estimate the buoyant lift needed to offset loss of wetsuit buoyancy at your greatest depth.	6	24	
STEP 2 To estimate total buoyant lift needed, multiply the figure you reached in Step 1 by 2.5.	15	60	

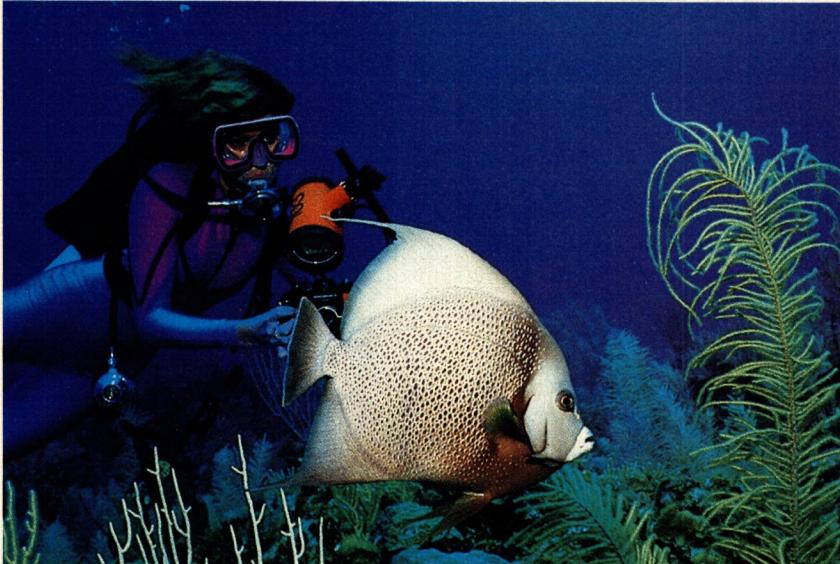
*Varies according to your size.
Data based on 1/4-inch wetsuit



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B

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swimming in a normal, slightly head-up posture only if positioned well up on the BC's shoulder. A simple tug on the inflate-deflate hose releases air. However, if the remote exhaust is positioned too low on the BC's shoulder, you might have to stop, become vertical in the water, then lean back to vent the BC.

Newer internal baffles prevent air from becoming trapped in pockets within the BC. Some older BCs can be fully deflated only with difficulty, whereas the newer designs literally squeeze the air out for you.

Current BCs have more convenience and safety features as well; some old-style chest straps only snapped into place in one orientation. Newer ones can be connected right-side-up or upside-down.

The quality of the valves being used in BCs has also improved as manufacturers have gained experience, studying how divers use the valves in the field. The improvements have come both in physical quality and in design, making the newer models substantially safer.

HOW MUCH IS ENOUGH?

The most important question to ask when choosing a BC is, "How much buoyant lift do I need?"

For years, the theory was that bigger was better; the more lift, the better the BC. Well, why don't we all just dive with inflatable pontoons strapped to our backs? In fact, we believe the best BC for you is one that

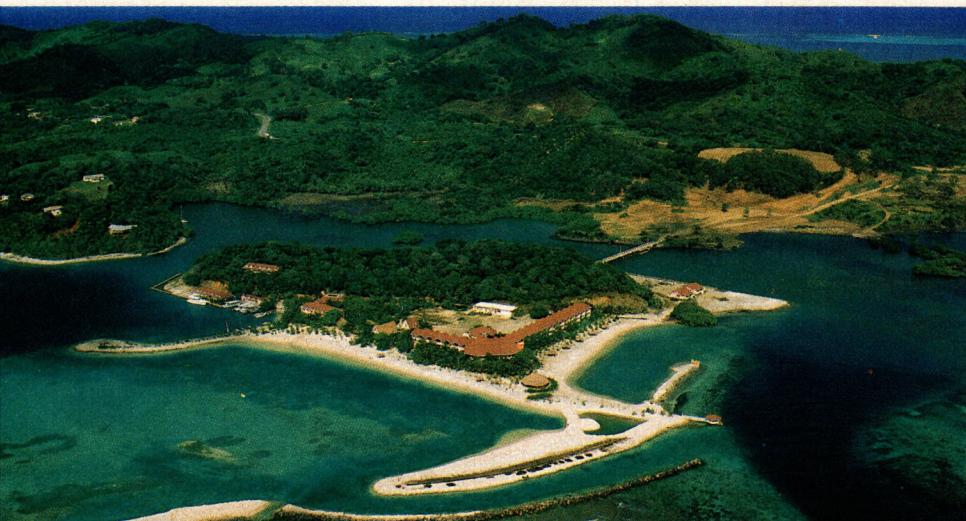
provides enough buoyancy to keep you safe and comfortable—and no more. Increased buoyancy means larger air chambers and more fabric. You'll pay for these extras not only at the cash register, but every time you dive by having to drag an overly large BC through the water.

So how large is too large? There's not much agreement out there on this

Tank Table: The Weight of Air

TYPE OF TANK	FULL	EMPTY	BUOYANCY CHANGE
Aluminum 50 @ 3000 psi	-3.0	+1.0	+4.0
Aluminum 63 @ 3000 psi	-2.0	+3.0	+5.0
Aluminum 67 @ 3000 psi	-5.0	+0.5	+5.5
Steel 72 @ 2475 psi	-5.0	+0.5	+5.5
Steel 76 @ 2640 psi	-6.0	0.0	+6.0
Aluminum 80 @ 3000 psi	-2.0	+4.5	+6.5
Aluminum 80 @ 3000 psi*	-4.0	+2.5	+6.5
Steel 95 @ 3300 psi	-15.0	-7.5	+7.5
Steel 95 @ 2640	-7.5	0.0	+7.5

*This is the newer aluminum 80, also called the "super 80."
All numbers are rounded to the nearest half pound; tanks listed as 0.0 just barely float when empty.



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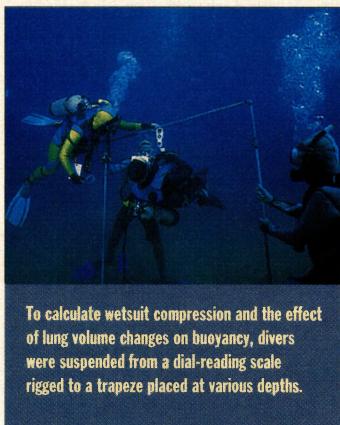
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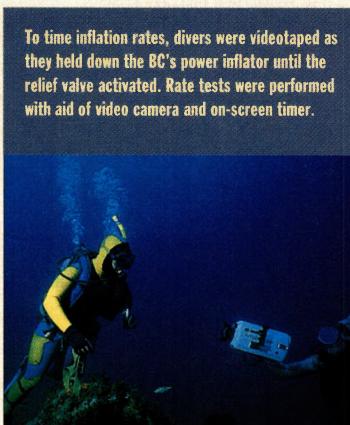
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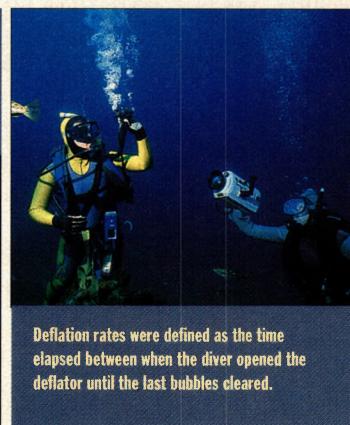
Measure For Measure: A Look At RSD's Wet Lab



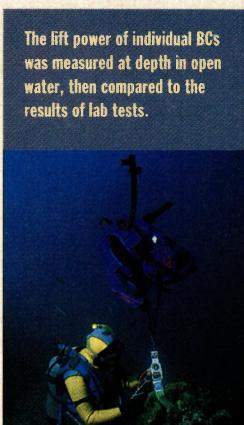
To calculate wetsuit compression and the effect of lung volume changes on buoyancy, divers were suspended from a dial-reading scale rigged to a trapeze placed at various depths.



To time inflation rates, divers were videotaped as they held down the BC's power inflator until the relief valve activated. Rate tests were performed with aid of video camera and on-screen timer.



Deflation rates were defined as the time elapsed between when the diver opened the deflator until the last bubbles cleared.



The lift power of individual BCs was measured at depth in open water, then compared to the results of lab tests.

PAUL NAYLOR

score, either. Based on our tests, we suggest that a reasonable range of buoyancy is between 12 and 60 pounds of lift capacity. The makers of BCs and several researchers have come to this same conclusion (though by different means) and what's on the store shelves today reflects this range.

Does this mean you're diving with the right BC? Maybe not. Field experience indicates that many divers are using a BC with 40 pounds of lift when

one with 30 pounds would be just as safe and more comfortable. How to know? Get out your pen and follow along on the worksheet titled "BC Boost: How Much Lift Do You Really Need?" (page 82).

INSTRUCTIONS FOR DIVERS WITH LITTLE OR NO WETSUIT COVERAGE

With no neoprene wetsuit, buoyancy variations are very minor—weights are

primarily used to offset the weight of air consumed during the dive. Therefore, tanks or carried objects have a proportionally greater impact on a diver not using a wetsuit than on a diver with a wetsuit. For a diver not wearing a wetsuit, buoyant lift needs are less, buoyancy changes are less and buoyancy control is far easier.

STEP 1: Float Height

Unless you're overweighted or carrying

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accessories (see Step 3), as little as four pounds of buoyant lift will allow you to float with your mouth comfortably clear of the water. If you're an inexperienced diver or if you dive where surface conditions are rough, you may want more.

STEP 2: Tanks

Scuba tanks play an important role in your overall buoyancy. Much of the information available about tanks is theoretical—culled from calculations of

buoyancy done in a laboratory. Our tests were done in salt water using tanks with K valves and a boot. These can't be completely precise either, given variations in manufacturing and the accuracy limitations of weight scales and pressure gauges, but our results should be accurate to within one pound. Check the "Tank Table" (page 84) for specifics and use the figure listed under "Buoyancy—Full" for the most negatively buoyant tank you

expect to attach to your BC.

STEP 3: Game/Accessories

Accessories you carry—dive reels, lights, camera housings and, if you're a hunter, game—add to your total lift needs. Calculate the in-water weight of extra items you dive with and add the buoyant lift needed to offset them to the worksheet.

Remember that a BC is not intended for use as a lift bag and shouldn't be used as part of a scheme to lift anchors, portholes and other weighty objects.

STEP 4: Maximum Negative Buoyancy

To calculate your potential negative buoyancy, add the numbers from steps 1, 2 and 3.

STEP 5: Mid-Inflation and Reserve

Inflating a BC fully can squeeze your chest and restrict your breathing. Also, a BC that is mostly inflated creates more drag than one only partially inflated.

During your ordinary in-water activities, you'll want to keep your BC less than halfway inflated. In other words, your BC should be able to compensate for the maximum negative buoyancy you encounter on a dive while less than half full, which also allows for reserve buoyancy in case of rescues or rough water.

To calculate the buoyant lift needed to operate at mid-inflation, double the maximum negative buoyancy from step 4. This number represents the approximate amount of lift you should look for in a BC.

INSTRUCTIONS FOR DIVERS WEARING A FULL WETSUIT

A diver using a full neoprene wetsuit has the same considerations during the buoyancy check, but the buoyancy of the wetsuit becomes the overriding consideration, greater than the other factors combined. Think of it this way: the wetsuit's positive buoyancy offsets the negative buoyancy of weights, tank and other objects when doing the buoyancy check, but this buoyancy is lost when the suit is compressed at depth. Suit compression is the key to understanding and determining buoyant lift needs in temperate (*Continued on page 103*)

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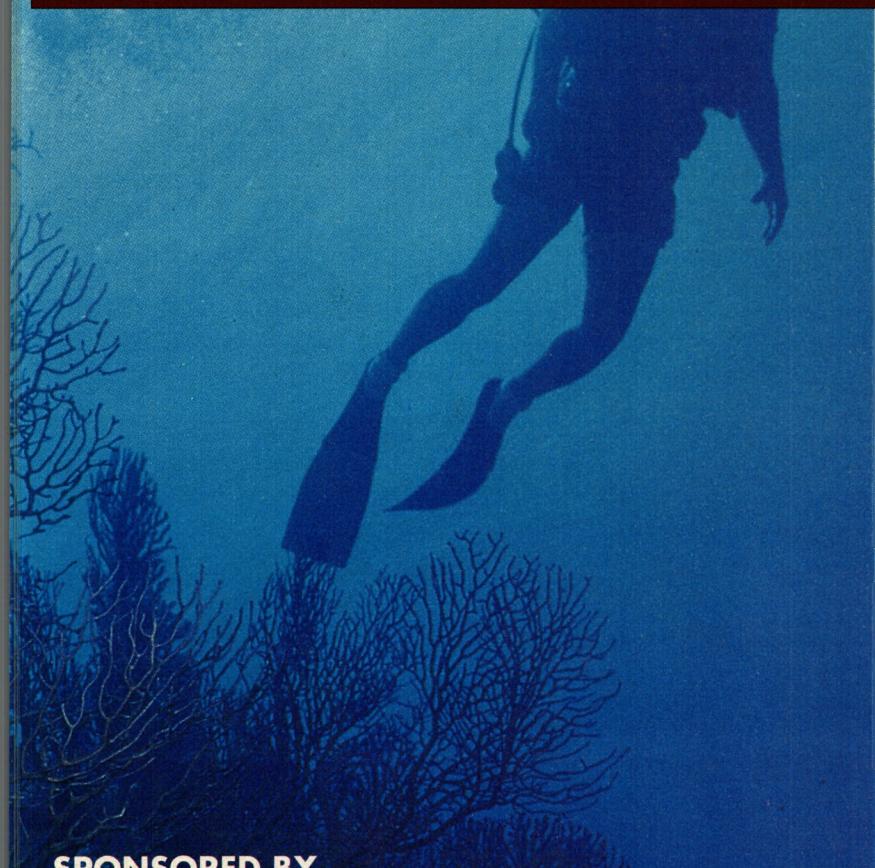
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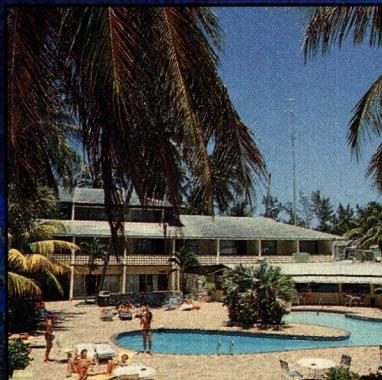
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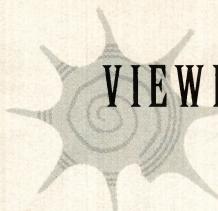
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VIEWFINDER

SCREEN TEST

TEXT AND PHOTOGRAPHY BY CATHY CHURCH

For the underwater photographer, much of life is the reverse of a Visine commercial: We spend a lot of time and an inordinate amount of money for strobes and filters so we can get red *into* our photos. Some have gone to heroic lengths to get into the red zone; experimenting with odd-colored filters, video lights and assorted other paraphernalia.

Today there's a simpler solution. Kodak now has a film specifically designed to bring out the warm tones in underwater photographs. The new film has an ISO (speed) rating of 50 and is called Ektachrome Underwater (UW 135-36 for 35mm, 36 exposures; catalog number 1546308).

I have to confess to more than a little skepticism when I was asked to test the new film against my tried-and-true standards—Ektachrome, Fujichrome and Velvia. And while Ektachrome Underwater isn't a panacea—there are too many potential variables of depth, light and water conditions for any one film to work perfectly under all circumstances—it does work. In some cases the results were almost astonishing. Used correctly, Ektachrome Underwater can be a valuable addition to your camera bag.

How It Works

In your basic scuba course, you learned that red light is absorbed most quickly in water, and that below 15 feet, most of the red in the sunlight coming from the surface has disappeared. As a result, red objects look darker and bluer than they would on the surface. Orange starts to disappear at 30 feet and a bright red dive suit will appear weak brown. In 40 to 60 feet of water even yellow disappears and the red suit will appear black.

To help put the red back in underwater photos, Kodak took an approach that's philosophically simple but scientific:

cally difficult: make a film that's more sensitive to red light, but which still has a pleasing color balance and will render background water a rich blue without turning it purple.

Ektachrome Underwater is four times more sensitive to red than to other colors. A common misconception is that

Kodak's new
underwater film
will make you
see red!



WITH ITS ENHANCED SENSITIVITY TO RED LIGHT, EKTACHROME UNDERWATER (BOTTOM) PRODUCES SIGNIFICANTLY WARMER TONES THAN STANDARD EKTACHROME (TOP).

the red on Ektachrome Underwater is more saturated than on a normal film. Actually, because of its enhanced sensitivity to red, subjects with red in them are *lighter* and therefore look brighter and redder than they would on other films. Ektachrome Underwater is a transparency film; the more light that strikes the film, the lighter it becomes. An object that is lighter appears brighter.

Water actually filters light twice. First, the light is filtered by traveling from the surface down to the object you're looking at. The object absorbs some light and reflects the rest to your eyes (or your camera). On the way, the water once again filters the light, further reducing the amount of red light.

Because Ektachrome Underwater is simply more *sensitive* to red rather than more *saturated*, the closer you are to the subject, the less difference you will see between an ordinary film and Ektachrome Underwater. There will still be a difference, but the differences are more dramatic at 20 feet than at two feet.

Speed Counts

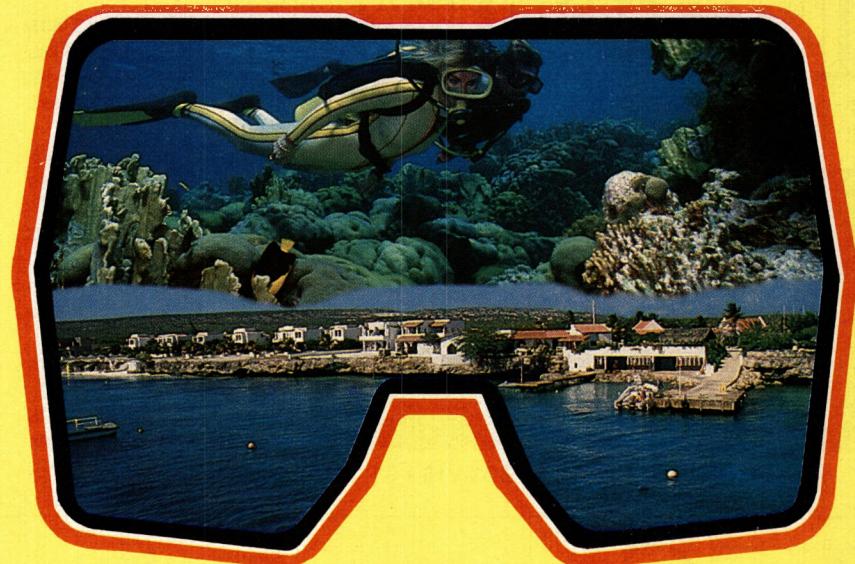
Perhaps because it is more sensitive to red than to other colors, the ISO rating (speed) of the film appears to vary slightly as the proportion of red in the image varies. Knowing this, I bracketed my exposures, closing the aperture a half-stop in shallow water (where there is more red light available) and when photographing scenes with a lot of red subject area.

Light It Up

Using Ektachrome Underwater with a strobe opens even more possibilities. Underwater strobes are slightly warmer (redder) than strobes designed for use above water. When used with Ektachrome Underwater at distances less than seven feet, a strobe may introduce too much red into your photo. Kodak recommends using a Tiffen UW0-2 filter over your strobe for subjects less than two feet away and a Tiffen UW2-7 filter for subjects between two and seven feet away. Beyond seven feet, you don't need a filter.

My tests indicated a tremendous leeway in the use of the filters. I had

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good results with the UW2-7 filter as close as a foot. At distances less than a foot, the foreground was too red with a UW2-7—whites had a magenta cast and greens became brown. I also found that I could use the UW0-2 filter for subjects up to three feet away. Beyond three feet, the subjects lost a bit of red, but were still warmer than when using an unfiltered strobe with ordinary film.

For wide-angle photos, where the foreground subject is typically one to three feet away, I found I could use either filter and get acceptable results, though I generally preferred the UW2-7.

As of press time, you're on your own as far as finding a way to attach the 4 1/4-inch glass filter to the front of your strobe. It will fit into the Helix Aqua Flash diffuser adapter. Rubber bands will hold the adapter over the front of most smaller strobes, but use a little tape so the filter doesn't pop out from the tension of the rubber bands. (If you find a filter in the Solomon Islands, you'll know who it belongs to.) If you tape the filter to the front of your strobe, be sure to allow some clear channels for water to get under the filter to prevent it from imploding at depth. Kodak and Tiffen are working on a filter holder that is scheduled for release this spring.

If you use Ektachrome Underwater with an unfiltered strobe on subjects that are close to the camera, you'll get excessively warm tones such as pink sand and ruddy skin tones. However, you can use this effect creatively to produce some interesting images. And using Ektachrome Underwater from more than three feet away with an unfiltered flash works very well. Even from four or five feet away, coral is warm brown and sand remains tan rather than going pale-blue.

I was able to pick up skin tones on a diver 15 apparent feet away in 50 feet of water using Ektachrome Underwater and an unfiltered Nikonos SB104 strobe. With ordinary film, skin tones took on a cyan cast two feet away and were lost at four or five feet, depending on the strength of the strobe.

One interesting quirk is the film's response to fluorescent pink dive

suits. They showed up bright pink from a distance of 30 feet away in 60 feet of water—an effect a strobe could never produce.

Bluer Than Blue

Photographers sometimes use CC30R (red) filters to warm up skin tones, and this does work. However, the filter is removing light from the entire scene—meaning you have to use a slower shutter speed, wider aperture or faster film to compensate. The resulting camera movement, difficulty in focusing or increase in grain are bothersome. The CC30R can also introduce red into subjects that have no red in them, like bright blue water. The good news is that with Ektachrome Underwater you aren't reducing the light reaching the film; and the other colors, including the all-important electric-blue background, aren't changed. In my tests, the backgrounds in photos shot on Ektachrome Underwater are identical to those shot on standard Ektachrome 50. However, when used in green water, Ektachrome Underwater tends to turn your backgrounds an unpleasant brown color.

Closing the Gap

As mentioned above, the closer you are to your subject, the less the difference between Ektachrome Underwater and standard films. Especially for close-up or macro photos, it has no real advantage as the color balance is very close to normal when you use a strobe only a few inches away from your subject. You'll have to use a filter over your strobe to use Ektachrome Underwater for macro shots, to prevent the whites from turning pink and shifting other colors toward red. In my tests, the reds were brighter on Fuji Velvia film with an unfiltered strobe than they were with Ektachrome Underwater and a filtered strobe.

Red Snappers

Ektachrome Underwater really shines when used by snorkelers in shallow water. Coral heads shot from the surface—even those 20 feet below—are warm and colorful. However, the low ISO 50 film speed doesn't allow

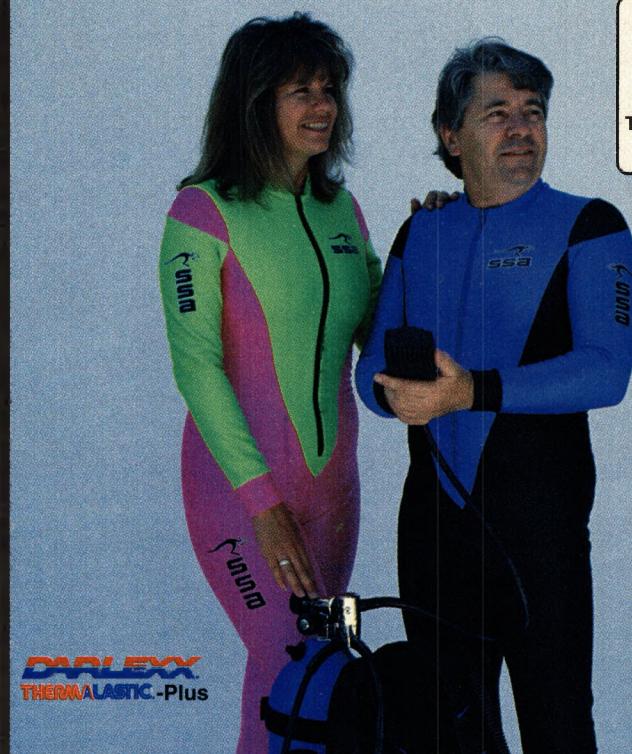
much depth of field when used with a standard 35mm lens, so beginners might have some difficulty focusing their cameras.

At my photo center in Grand Cayman, I'm now loading rental cameras with Ektachrome Underwater and fitting them with 20mm lenses. The 20mm lens offers enough depth of field to assure more success than a 35mm and the film eliminates the need for a strobe.

For those concerned about the low speed, the film does respond well to being pushed one full stop during processing (equivalent to an ISO 100 film).

Underwater photographer Cathy Church operates Sunset Underwater Photo Center in Grand Cayman. Her photos have been widely published internationally and she teaches photo courses in Grand Cayman.

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ADVANCED SCUBA

WHY DIVE DRY?

BY BRIAN MERRITT

Because you stay warm. I rest my case. No need to mention the Pacific's kelp forests and the magic in their fronds, or Maine's tidal passages and their mother lode of invertebrates, or America's most historic intact wrecks—all below the thermocline.

Picture this: A mountain lake. You're sitting on a picnic table eating PowerBars with your dive buddy, laughing and chomping while November's sullen rain falls on wet-suited homeboys groaning and shivering their way to the changing rooms. You don't do wet. You munch, comfy in your dry suit. Nothing stops you from getting a nitrogen fix. End of story.

Hard, Cold Facts

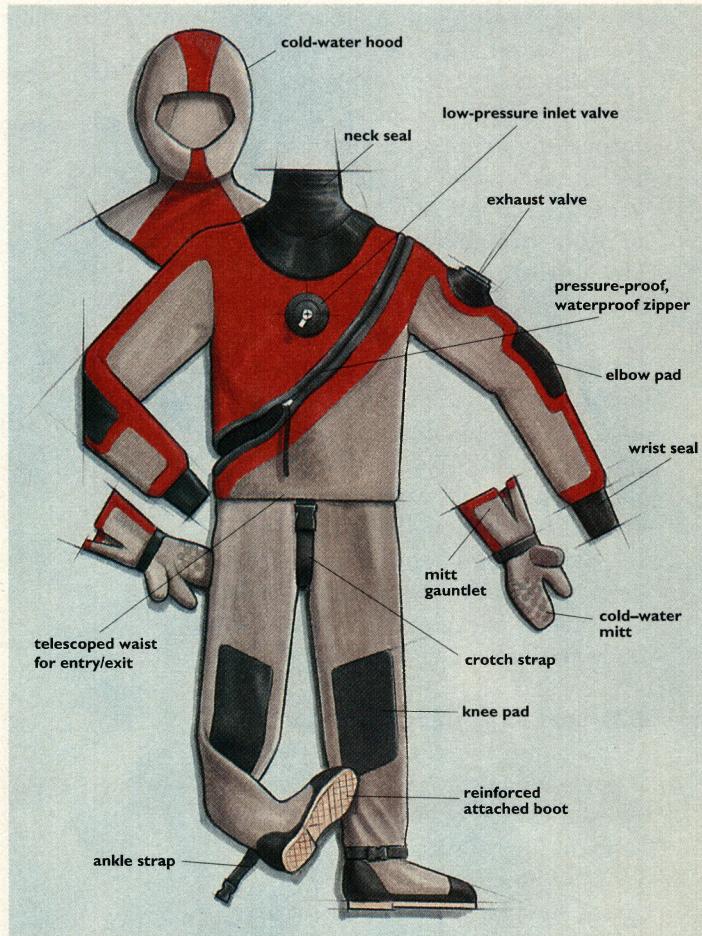
Dry suits aren't just for winter's techno-gorillas with two of everything: two tanks, two computers, two wreck reels, too much. Anyone who wants to see the sights or snatch some lobster in water 55F or below will be more comfortable—and, with instruction, safer—in a dry suit. Why?

Because diving is a sport of hard cold facts: Water sucks heat from your body 25 times faster than air. The colder you are, the more at risk you become for hypothermia, out-of-air emergencies (cold divers use air faster) and decompression sickness (a 30 percent higher risk when chilled). Stay dry and you stay warm.

With its system of zippers, attached boots, and seals at the neck and wrists, a dry suit keeps out virtually all water, leaving you surrounded by a cushion of air that your body warms to toasty levels. The effect is similar to watching TV in your living room: nestled in comfy undergarments, insulated from the cold water outside, you watch the liquid world float by the tiny screen of your mask.

Uniman Meets Superman

History is another reason: Dry suits are the original form of exposure protection for divers. Jacques Cousteau added air



BOB LAPONTE

No question
about it. Dry suits
let you do it
anytime, anywhere.

to his 1946-model dry suit by blowing air out his nose, past his mask seal and into his hood. Sure, the latex suit he invented wasn't much more than a Ziplock bag with vents, but it allowed him to dive wherever, whenever he wanted.

In the 1960s, the Swedish used the waterproof, pressure-proof zipper invented by B.F. (No Blimp) Goodrich to fashion the first non-nose inflated dry suit—the Unisuit, whose low-pressure power inflator and easy zipper entry must have seemed like gifts from the diving gods.

Once the neoprene revolution came to diving, cold-water bubble blowers soon had a form-fitting neoprene dry suit that was more flexible than the Uni and, because of neoprene's insulating qualities, didn't require bulky layers of undergarments. The 1970 Supersuit's moderate price tag also put it in range of the diving masses. Suddenly, diving

dry was as fashionable as platform shoes and disco dancing.

The Dry Goods

Like its wetsuit cousins, the foam neoprene dry suit is formfitting but loose enough so that, if needed, a thin undergarment can be used. Also like wetsuits, the bubbles in this dry suit will eventually compress, losing their insulating and buoyant properties.

Crushed neoprene dry suits, first developed for commercial divers, offer some of the insulation of foam neoprene, but little of its buoyancy. Crushed neoprene's looser fit allows either a thin undergarment or a thick woolly bear, depending upon that day's thermal needs. Highly resistant to tearing and compression at depth, crushed neoprene is also considerably more expensive than foam neoprene.

Coated fabric suits (usually polyurethane-coated nylon) are flexible, easy to don, and less expensive. Their drawback is a near total lack of insulation, requiring thick undergar-

ments that add bulk.

The seams of a vulcanized rubber suit are fused by heat and pressure, providing the ultimate in watertight integrity. Rugged, reliable, quick drying and expensive, vulcanized rubber suits are the frequent choice of divers whose passion or profession takes them down in the worst conditions.

The Tough Questions

Great, they're affordable and reliable, but what about those feet-first ascents? Aren't dry suits dangerous?

The buoyancy concerns associated with a dry suit are different from those of a wetsuit, not more dangerous. A wetsuit wraps you in a uniform, compressible layer of neoprene rubber filled with nitrogen bubbles. As you dive, the bubbles compress and expand, altering your buoyancy in an even, predictable manner. However, in a dry suit you are surrounded by a layer of air, which not only compresses and expands, but also shifts posi-

tion inside the suit. The air can move from neck to feet, or from side to side, in an instant. That's why you can experience a feet first ascent, if you're not careful.

To control buoyancy when in a dry suit, simply apply the same principles you learned during entry-level training. First, always wear a BC. Dry suits are designed to provide thermal protection, not buoyancy control—that's the job of a BC.

Second, body positioning must be kept in mind at all times. A wet-suited diver can make a head-first dive without fearing that his buoyancy will shift suddenly to the legs. Try the same maneuver in a dry suit and you'll end up bobbing along the surface, feet up, looking like a navigational aid. Whenever changing position, a dry-suited diver must do so slowly, anticipating the shifting of air in the suit. You should maintain a horizontal or slightly feet-down attitude throughout the dive.

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tal line, but let's say I reach down quickly to grab a lobster and WHAM-MO! Suddenly I'm upside down and ascending. What then?

First, don't panic. Second, kick strongly downward to increase pressure on the suit and reduce buoyancy. Third, tuck and roll to a horizontal or feet-down position and vent the suit to further reduce buoyancy and help you get upright again.

I've also heard that if your suit leaks or floods you could be in big trouble—hypothermia or so much negative buoyancy that you can't get off the bottom. Is this true?

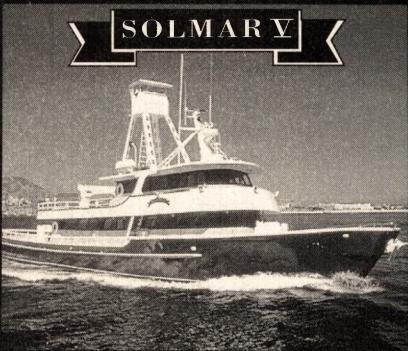
Leaks and floods, like any equipment malfunction, are potentially dangerous if you don't know how to handle them. Most dry suit leaks are minor: a wet sleeve or shoulder rather than the Great Flood. The majority of these

and other leaks can be traced to the neck or wrist seals. Therefore, when donning the suit take extra care to ensure these seals are clear of watch straps, necklaces, hair or anything that might allow water to seep in.

Another tip: The wider the seal, the more skin it comes in contact with. That means greater ability to keep out water. Also, if you suspect a minor leak from the zipper or one of the seams, have the suit inspected by a trained service technician at your professional dive retailer.

Large leaks are usually discovered immediately upon entering the water or

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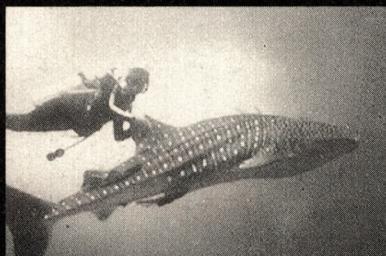
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In case of a
feet-first ascent, don't
panic. Kick downward to
increase pressure on
the suit to reduce buoyancy,
tuck and roll to
a feet-down position,
then vent the suit.

submerging. If you spring a leak while in the water, abort the dive. If surfacing and adjusting the seals doesn't work, get your equipment off and track down the problem.

Dry suit floods are rare but can pose serious problems. Negative buoyancy can be overcome by the use of your BC and dropping weights. Position yourself so that the tear or hole is the lowest point of the suit. This will allow you to maintain air in the suit during ascent and exit.

The best remedy for leaks or floods is, of course, prevention. Regular suit maintenance and care while suiting up will eliminate getting wet.

SLIPPERY SITUATION

I could see the cashier's agitation growing as the line shortened. Her eyes darted to what I held in my hands, her thank-you's becoming increasingly forced. She had waited on me the day before and now I was buying even more of the same thing.

But I guess it was my question that sent her over the edge: "Do you stock these in larger sizes?"

Her face grimaced as she exclaimed to the nine tubes of KY Jelly I stacked before her: "What are you, some kind of sex maniac?" Customers turned to stare, the manager started toward us.

Sure, I could've explained that I was on a team of divers about to hunt for scallops in Cape Cod Bay and that dry suits were necessary in February.

I could've said how vital a good lubricant is for easing past a dry suit's wrist seals. How a torn cuff is the most common cause of dry suit leaks.

I could've elaborated on the value of KY Jelly around the neck seal, how it doesn't irritate like silicone or detergents. How, since KY is water-soluble, it doesn't clog zippers the way Vaseline would.

Finally, I could've explained that KY's only drawback was its high price because of these irritatingly small tubes.

Instead, I just looked at her and smiled, then said, "No, I'm a dry suit diver. See ya tomorrow."

—JOHN BALDWIN

What if the inflate or deflate valves stick? What do I do then?

The same as you would if it happened to your BC. If your inflator valve sticks open, operate the mechanism quickly several times to unstick the spring or dislodge the salt or ice crystals or whatever the offending gunk is. If this doesn't work, simply disconnect the inflator hose. After re-establishing buoyancy, try reconnecting the hose to the inflator mechanism, since depressurization can often resolve the problem.

Exhaust valves can also become stuck in the open position. Again, try operating the mechanism quickly several times. If this doesn't work, stabi-

lize yourself on the bottom or by holding a fixed object or line. Inflate the suit enough to force more air past the stuck valve, which may correct the problem.

If the exhaust valve is stuck in a closed position, you may need to vent excessive air through the wrist or neck seals. Open the seal only enough to allow air to escape yet minimize the amount of water entering. You will get wet, but you'll also maintain buoyancy control. Practice this procedure before ever diving with the suit.

Don't you have to add a lot of extra weight to offset the suit's air? I'm no Incredible Hulk, you know.

While some extra weight will be required for most dry suits, it will not exceed 30-40 percent of what you're already using to dive with a full quarter-inch wetsuit. Once you're fully geared, the extra weight will not be that noticeable. The idea is to add only enough weight to offset the small amount of extra air needed within the suit to keep warm.

Use the same procedure for weighting yourself in a dry suit as a wetsuit. The extra weight you require can be distributed in any number of ways:

adding ankle weights, using an integrated weight system, switching to a steel tank or stacking weights on the belt. Experiment to find the best options for you. Just keep in mind the importance of being able to ditch your weights in an emergency.

Sounds like I need some special training before I use my new dry suit. Or can I just teach myself?

Sure, you can teach yourself. You can also pack your own parachute without anyone showing you how. Training in the proper use, skills and emergency procedures of dry suit diving will provide you with classroom and in-water experience under the guidance of an instructor. Buoyancy control, trim, adjusting suit volume, proper weighting and proper use of your specific suit are among the topics covered. Dive retailers who sell dry suits usually offer this training. Although some dry suits come with their own instructional video, you should still seek guidance and supervision from a qualified instructor. ☐

Brian Merritt, a PADI instructor-evaluator, learned the hard way to always double-check his dry suit zipper.

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STINGRAY CITY LIMITS

BY RICHARD MARTIN

Q:

I recently returned from a vacation on Grand Cayman, where I made several dives at

Stingray City. When I got home, I tried to learn more about stingrays but couldn't find out much. Can you tell me a bit about the natural history of the rays at Stingray City and whether or not they're dangerous?

BRENDA HUPKA
DENVER, COLO.

NORBERT WU

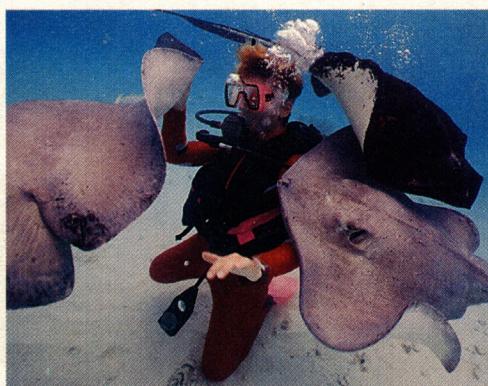
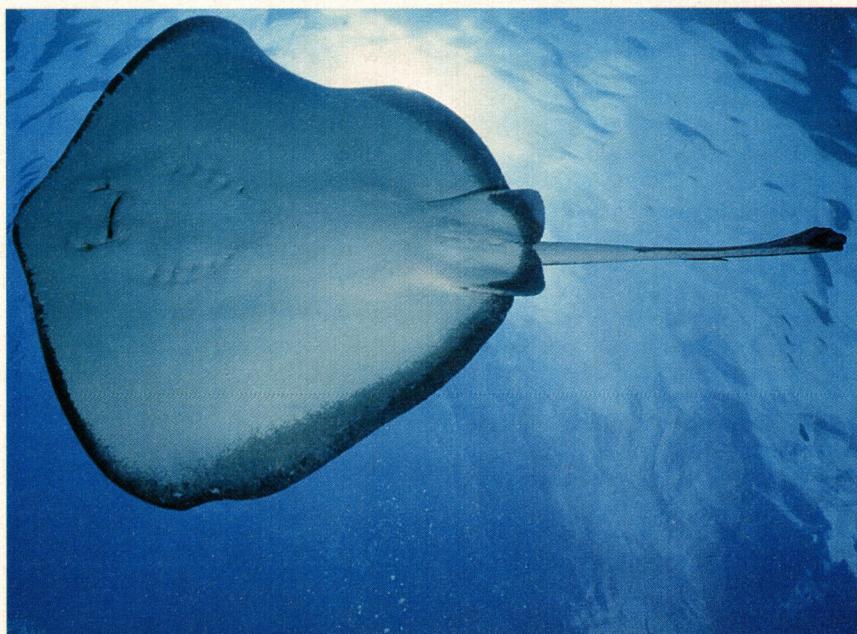
CATHY CHURCH

A: Stingray City has been called "the most exciting 12-foot dive in the world." Thousands of divers have hand fed the resident southern stingrays without serious incident. While a few divers have had their hands or arms "bitten," the flattened dental plates of these rays do minimal damage (often little more than a reddish pucker mark called a "stingray hickey").

Very little is known about the biology of most skates and rays because they've long been overshadowed by their more infamous relatives, the sharks. This is unfortunate, as these "pancake sharks" are fascinating creatures in their own right. There are at least 96 species of stingrays worldwide (families *Dasyatidae* and *Urolophidae* combined), of which five are common in the Caribbean. The species predominant at Stingray City is the southern stingray (*Dasyatis americana*).

The southern stingray is an inshore species, frequenting shallow, open areas of sand and mud bottom. They're commonly found in bays and estuaries, usually buried in sand with only eyes and spiracles (gill openings) exposed. Although primarily a warm-water species, the southern stingray is sometimes found as far north as New Jersey, migrating to higher latitudes as the water warms in summer.

Southern stingrays have been observed singly, in pairs and in loose aggregations. Although most are bottom-



THE SOUTHERN STINGRAYS AT GRAND CAYMAN'S STINGRAY CITY ARE VERY FRIENDLY; THEY'RE PERFECTLY CAPABLE OF DEFENDING THEMSELVES BUT RARELY SO MUCH AS NIP VISITING DIVERS.

dwellers, southern stingrays have been observed leaping above the surface, producing a loud clap upon reentry. Such leaping has been attributed to attempts to free themselves of parasites, but stingrays have overlapping dermal denticles (scales) that preclude most skin parasites; I feel the leaping's more likely associated with some kind of social display (matting or maybe even territorial).

Southern stingrays are typically inactive during the day, often lying buried in the sand. At night, they hunt on inshore sand flats and in sea grass beds for food.

Male southern stingrays are much smaller than females. Males are sexually mature at a disc width of about 18 inches, and rarely get much larger than 30 inches across. Females are sexually mature at a disc width of about three feet and may grow to a width of nearly six feet. Mating occurs in shallow water during winter (December to January). After a gestation period of about five months, three to five young—each measuring seven to eight inches across—are born in shallow estuaries. The young will remain in estuarine waters for about three years, often seeking shelter among the prop roots of mangroves.

Although the rays at Stingray City are pretty much habituated to contact with divers, stingrays are potentially dangerous and divers should bear that in mind when interacting with them. Stingrays, like sharks, are basically "path of least resistance" types: Given an opportunity to flee rather than fight, most will simply swim away. But if persistently harassed, stingrays are quite capable of defending themselves.

The "sting" that gives these fishes their common name is a modified dermal denticle mounted near the base of the tail, about one-third along its total length. The stinger consists of a blade-like barb with serrations along both edges and a venom gland at the base. The serrations point toward the base of the spine, making removal difficult, and the venom is a fairly powerful nerve toxin. But like most fish toxins, stingray venom is a large protein that can be broken down by heat.

The best way to treat a stingray spinning is to avoid it in the first place. When wading in shallow water, do the "stingray shuffle": drag your feet rather than step as you would on land; this reduces the likelihood that you accidentally tread on a buried stingray by giving it a chance to escape. Stingrays would rather avoid the encounter altogether. They have enough problems living in the shadow of their sharky cousins.

Q: Why don't deep-diving cetaceans and pinnipeds suffer from DCS?

STEPHEN HYNDMAN
TORONTO, ONTARIO

A: Life originated in the sea perhaps four billion years ago, and about 80 percent of it still lives there. It is testimonial to the wondrous plasticity of vertebrate structure that, about 50 million years ago, some mammals were able to return to this ancestral home full-time.

Despite impressive adaptations in streamlining and the evolution of flippers and flukes for efficient underwater propulsion, some limitations of the basic mammalian design persist. Unlike fishes, which can absorb dissolved oxygen directly from water via gills, mammals must take a supply of air with them as they dive.

Diving ability varies greatly among marine mammals, but in many cases is considerable (some would say enviable): the sperm whale can remain submerged for at least 90 minutes, diving to depths of more than 3,000 feet; pilot whales and belugas are known to dive to at least 2,000 feet; and during an hour's observation, two bottlenose dolphins made 25 dives down to 300 feet. Adult female elephant seals are perhaps

the champion deep-divers among marine mammals—they can remain submerged for up to 62 minutes and are known to descend to at least 4,100 feet below the surface, averaging only three minutes between successive dives. About 50 years ago, a clever primate developed the ability to join the ranks of marine mammals for brief periods, through a kind of technological presidigitation.

Unlike scuba divers, many marine mammals can dive deep for extended periods and ascend quickly, apparently without suffering effects of decompression sickness (DCS). Only recently have we begun to understand how they do it.

The most obvious difference between air use by marine mammals and by scuba divers is that the former breathe at the surface, dive and don't breathe again until they resurface. During a dive, a marine mammal's heart rate is reduced to less than half its surface rate and oxygen is shunted to vital areas, being utilized almost exclusively by the brain and heart. Blood flow to other organs is reduced and these tissues have developed complex mechanisms to cope with the lack of oxygen. Rather than rely almost exclusively on oxygen dissolved in the blood (as in ter-

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restrial mammals), more than 40 percent of the oxygen supply of a diving marine mammal is chemically bonded to an oxygen-carrying molecule called myoglobin. Use of oxygen stores in the muscles greatly reduces a marine mammal's likelihood of suffering that dread scourge of free divers, shallow-water blackout.

In regard to DCS, most marine mammals have no sternum, so their rib cages are not fused at the front. As a result, water pressure during a dive causes the lungs to collapse, facilitating oxygen uptake within clusters of short grape-like sacs called alveoli, each double-lined with capillaries. In turn, the alveoli collapse, forcing unused air into the trachea (windpipe) and its branches. Alveolar collapse is complete at a depth of about 300 feet, and little pulmonary respiration occurs at greater depths. Since the cartilage-lined passages of the trachea are relatively impermeable to gas exchange, below depths of about 300 feet marine mammals absorb very little additional nitrogen.

One intriguing mystery of deep-diving marine mammals involves high-pressure nervous syndrome (HPNS). As dramatized in the 1989 film *The Abyss*, the nerves of many terrestrial mammals—including divers—fail to function normally at great depth, firing wildly in a kind of neurological storm. The precise neurochemistry involved is still in dispute and quite complicated, but it is generally agreed that the effects of nitrogen under prolonged pressure seems to be at least part of the cause. It is not yet known how deep-diving pinnipeds such as the elephant seal avoid the debilitating effects of HPNS, but recent evidence from deep-diving cetaceans suggests an intriguing possible solution:

A whale's exhalation "spout" consists mostly of partially condensed water vapor, but it has recently been discovered that the spout also contains droplets of oil. Nitrogen dissolves roughly six times faster in some oils than it does in water; it has been suggested that oils secreted by the alveolar

lining of cetaceans may remove much nitrogen from inspired air before it is taken up by hemoglobin in the blood and myoglobin in the muscles. If true, this adaptation is an elegant touch of genius from the drawing boards of evolution. Who says you can't go home again? ☐

Australian marine biologist Richard Martin is the founding director of ReefQuest Expeditions, a nonprofit organization dedicated to the conservation of coral reefs.

Is there something about marine biology you've always wondered about, but didn't know who to ask? Did you encounter or photograph an unusual sea critter you can't identify or would like to know more about? Do you think you can stump our marine biologist? Send your questions to "Ask a Marine Biologist," c/o Rodale's Scuba Diving, 6600 Abercorn St., Suite 208, Savannah, GA 31405.

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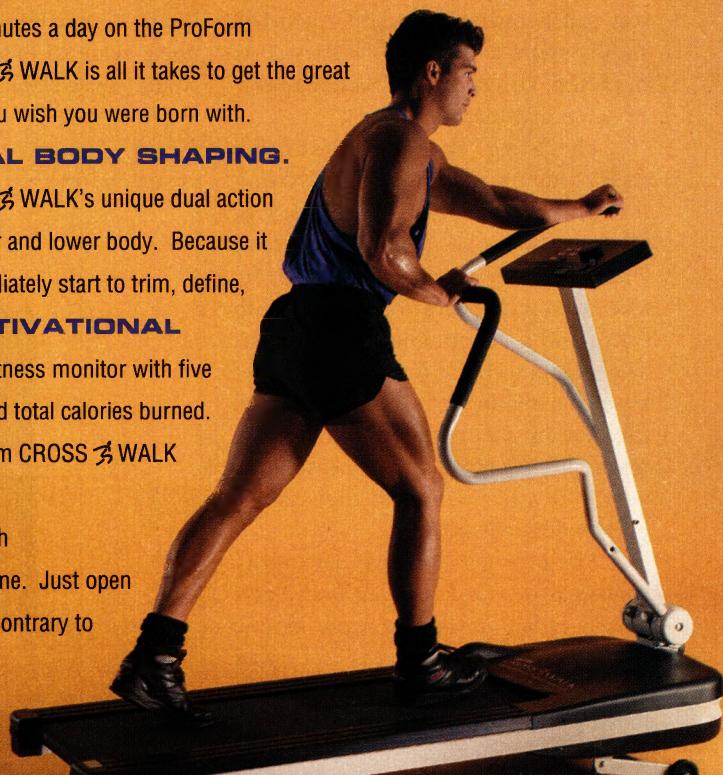


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SEÑOR BIG

(Continued from page 41)

in the Caribbean: cabrilla, clarion angels, moorish idols. As you drift dive at 40 to 50 feet through the massive schools, be sure to check the overhangs and crevices for Mexican goatfish and guineafowl puffers. And in the sand flats adjacent to a site called El Cantil, you'll find a vast army of garden eels stretching as far as the eye can see, sausage bodies weaving above sand-holes, disappearing and reappearing as you drift past.

But Los Cabos' most popular advanced dive is Gordo Bank, a series of submerged volcanic ridges beginning at 90 feet. The rock faces are blanketed by a variety of orange sponges and inhabited by fat zebra eels standing sentry over thickets of black coral. Be prepared for schools of jack that number, literally, in the thousands. This is also a favorite haunt of Señor Big, so save plenty of air for just hanging in the water column at 40 to 50 feet, where on one dive I watched two hammerheads scope out a school of herring and a giant manta glide just below my fins.

LIFE AT NO SPEED

Between Cabo San Lucas and La Paz to the north, Highway 1 snakes 100 miles through open desert so hot you'll be the only life form not seeking shade at midday. The beaches along the way, if you can get to them on the washboard dirt roads, are white-sand works of art, framed by rocky points and leading to some world-class shallow reefs that you'll most likely have to yourself.

For a heavy dose of in-country living, try Punta Pescadero: 15 miles up a dusty turnoff I found a remote fisherman's hotel sitting alone atop a rocky promontory. Only three guests in the off-season, no phones, non-functioning satellite TV. But a wealth of peace, quiet, privacy, and a breathtaking view of water that was blue and wide as the sky. With the hotel's compressor broken and the *panga* beached for repairs, I worked up an appetite by snorkeling in the shallows, then took my simple but succulent native meals on a red-tiled veranda, serenaded by ocean

birds. Afterward, lying in a hammock, cooled by a sea breeze scented with sweet peppers, I watched pelicans swoop by on the thermal currents and seriously considered never moving another muscle again.

A PIECE OF LA PAZ

Former pearl center and now capital of Baja California Sur, La Paz is an authentic Mexican port city of 170,000 souls who thrive on strolling hand-in-hand down the palm-fringed *malecón* watching the sun drool color across the bay. Beachside cantinas serve cold beer, chips and salsa to go with the sunsets, a time to relax in an open-air café, feel the earth breathe easy, and understand why this town is named "Peace."

No beach diving in La Paz, but offshore choices range from deserted islands to rocky pinnacles, growth-encrusted wrecks and the possibility of some serious encounters with Señor Big. The La Paz dive sites are accessed via local live-aboards, a fleet of day boats and even a camping/diving excursion to Isla Espíritu Santo.

It's a 90-minute boat ride to the El Bajo seamount, actually a series of three pinnacles that together have become La Paz's signature dive site. El Bajo first gained fame when underwa-

ter photographers Marty Snyderman and Howard Hall and novelist Peter Benchley (who later wrote of his experiences in *The Girl in the Sea of Cortez*) rode and filmed gigantic manta rays here in the early '80s. Today it's known for schooling hammerheads, an occasional bull or mako shark and a circus of big-game fish: marlin, tuna, dorado, wahoo and corvina, to name a few. But, most of all, this is where you hang out on the laundry line and watch for incoming whale sharks.

Unlike the more barren rock faces of other pinnacles, these are covered by a rich patina of yellow cup corals, vermillion sea fans, and clusters of black coral that provide havens for a variety of reef fish—from triggers to trumpets to butterflies. Just above them, schools of barracuda hang in the water column, idling like race cars at the starting line, while packs of amberjacks and pompano circle continuously. In addition to the whale shark, we saw at least a half-dozen hammerheads snacking on a twisting, silvery bowl of anchovies.

It's wild and woolly out here, with sights that'll peel your eyeballs. Indeed, El Bajo is strictly advanced territory: the shallowest peak begins at 60 feet, the others rise only to 75 feet, with 100-foot sand channels between them. Be prepared to use the anchor line for

At St. Lucia, the ocean does most of the work and Club Med does the rest.



ST. LUCIA (West Indies)

Club Med St. Lucia has a dedicated dive center where experts and beginners can experience the thrill of drift diving, swimming aided by the ocean current. And it's just as easy to enjoy all the other sports and activities that make this Club Med family village a unique experience. For details, see your travel agent or call 1-800-CLUB MED.

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CIRCLE NO. 34 ON READER SERVICE CARD

descents and ascents. The southerly current is sometimes strong enough to sweep the unwary out to sea.

After the 200-proof adrenaline of El Bajo, you can loosen up at Los Islotes with the largest sea lion rookery in Baja. After lunch on a deserted beach, strap on your snorkel gear and wade into a zoo of pinnipeds. You'll quickly become the focus of attention of the pups who like to nip at your fin tips—an invitation to play. During early summer breeding season, watch out for the bulls, who charge at you ferociously but veer off at the last moment. It's best to move out of the territory they're defending.

IN THE HEART OF OLD MEXICO

After three days of diving the islands of La Paz, it was time to pack for the 225-mile trip through the *Sierra de la Giganta* mountains to Baja's oldest town—Loreto. Long known to sportfishermen as Yellowtail Capital, Loreto is still trapped in the rustic, pre-NAFTA days of old Mexi-

co—palm fronds rustle along unpaved streets, roosters and dogs roam free, and the mountains brood over 12,000 laid-back inhabitants. But the wake-up call of development has recently been sounded in this sleepy town. At Nopollo Bay, the Stouffer Presidente Hotel is the first of several resorts planned. Get your supply of old-time Mexico while it lasts.

The half-dozen islands offshore of Loreto provide the most popular dive sites. Isla Coronado, one-and-a-half miles out, offers shallow wall dives. At Isla del Carmen, the currents and depths are stronger and deeper (from 45 to 180 feet, just like that), but the payoff is schools of the area's famous game fish.

Heading north, 90 more miles in a Jeep gets you to Mulegé—a tropical oasis surrounded by mangrove swamps and dense groves of date palms along the Rio Santa Rosalía, the Baja's only navigable river. The pretty town of 5,000 with the carefree spirit of an oasis is also a dropout haven for more than 1,000 Americans on perma-

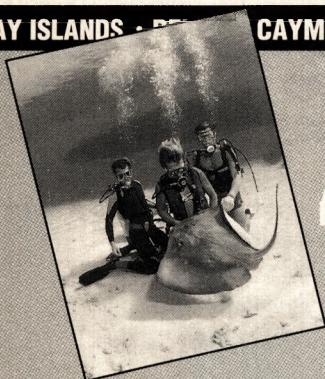
nent vacation in trailer parks along the river.

Local divers head either north to Punta Chivato or south to Punta Concepción. Also ask the local dive shop for a trip five miles offshore to the tiny islands of Santa Inez, which provide a natural fishery for deep-water pelagics as well as Señor Big.

After days of searching for him in the water, feeling the tension as he approached, watching the smaller fish begin to dart about like swallows, it was at a church in Mulegé that he taught me his final lesson. Built on a high bluff, the old mission church of Santa Rosalia de Mulegé overlooks the pastel town below, where the pearly green river and palm trees flow to the mountain's edge. Sitting there, looking down, I remembered what John Steinbeck wrote almost a half century before about his travels here: "The brown Indians and the gardens of the sea, and the beer and the work, they were all one thing and we were that thing too."

And, says Señor Big, don't you forget it.

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DOMINICA

(Continued from page 61)

Black coral trees and devil's sea whips stretch into the blue water, an obstacle course for divers who want a closer look at the vivid patchwork tapestry covering the wall. The wall—crowded with life over, under and on every side—can be a little disorienting, so watch your depth gauge.

On the north side of the crater you'll also find the fruitful Coral Gardens, a well-tended plot that more than lives up to its name. A rocky outcrop called Point Guignard marks the northern edge of Soufriere Bay. Our dive plan carries us around the face of the rock at 40 to 50 feet and then cuts through a crevice that brings us back to where we started. Along the way we follow a white-spotted sharptail eel until it slithers into a cave. After skirting the limbs of a massive black coral tree that gates the entrance to the grotto, we come face to face with a large school of glassy sweepers, their big round eyes and copper potbellies shimmering in the darkness.

Dive operators cut straight across the crater to reach equally rewarding sites on the south side. Scotts Head Pinnacle reaches within 10 feet of the surface and features more colorful tropicals and invertebrates, as well as a photogenic arch at 30 feet. A flat-top rock called Condo rests on a sandy bottom at 70 feet. The high-rise complex offers spacious accommodations to a friendly community of lobsters, banded shrimp and arrow crabs. Visitors welcome.

Midway up Dominica's Caribbean coast, another rocky point offers more great diving and a lesson in island history. Rodney's Rock was the site of a non-battle between French and British admirals whose mutual contempt is legendary. British Admiral George Rodney supposedly put men ashore on the rock at night with lanterns to light it up like a ship. When the rival French Admiral DeGrasse saw the sitting duck pinned to the island's coast, he let loose a fusillade that depleted his ship's ammunition, allowing Rodney to come around from behind and surprise the defenseless French man-of-war.

Two current residents of Rodney's

Rock figure as prominently in Dominica's marine lore as Rodney and DeGrasse. Frogfish and seahorses are the unlikely glamour duo of diving the island, and I found one of each at this site. Divers collect sightings and trade information on the best place to view these lethargic reef-dwellers. The homely orange-phase frogfish I saw was sitting in the cup of a sponge, trying not to draw attention. The dusky lined seahorse was equally inconspicuous, hanging on a stick of finger coral underneath a rocky overhang.

My September visit coincided with the off-season for dive operations along the northwest coast of the island, so I missed out on exploring the sites there that have opened in recent years. The areas around Portsmouth, Prince Rupert Bay and Douglas Bay offer conditions similar to those in the south and promise vibrant reefs and precipitous walls.

THE BANANA DILEMMA

Back on shore, Dominica is fast approaching a critical fork in the economic highway.

The vertical tendency of the island's landscape makes large-scale farming operations impossible. Peasant farmers sow the land the only way possible, in bits and pieces. It's an expensive way to farm, and transporting the

small harvests across an ocean to European consumers raises costs well past what the market will bear.

Currently, the former English colony enjoys a protected market in which banana farmers are paid a premium for their fruit. However, current quotas lapse at the turn of the century and island officials fear Dominican bananas won't be able to compete with cheaper and more abundant Central and South American produce. In the meantime, government officials are scrambling to find something to fill the potential economic vacuum—some suggest other fruits while others see cut flowers as the next money crop. Many feel, however, that high-end tourist development is Dominica's banana for the next century.

After my last dinner on the island, I hop a dive boat to Champagne for a farewell night-snorkel. Buoyed by the springs' warm bubbles, I turn onto my back to face the mountains rising out of the sea and dotted with hillside plots of avocados, guavas, mangoes and bananas. I try to imagine these same peaks punctuated by the neon glitz of casinos, high-rise condos and the traffic of spendthrift jet-setters, and can't help hoping that the island will, once again, come to its own defense. ☐

Buck Butler is an RSD associate editor.

Where the walls are coral and the water is Turquoise.



TURKIOSE (Turks & Caicos)

Whether you're a beginner or an expert, single or a couple, you'll love scuba diving at Club Med Turkose. It features a dedicated diving center and tropical waters filled with immense, coral walls. What's more, you get all the other sports and activities that make Club Med a unique experience. For details, see your travel agent or call 1-800-CLUB-MED.

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CIRCLE NO. 34 ON READER SERVICE CARD

FREE DIVE INFO

Simply tear out the reply card, circle the numbers preceding the names of the companies which interest you, fill out your name and address, and drop it in the mailbox. (We've paid the postage!) You'll soon be receiving information which

will help make your diving more enjoyable!

LIMITED TIME OFFER*

DIVE EDUCATION & INSTRUCTION

- 1. DAN See ad pg 111
- 2. DICA See ad pg 116
- 3. PDIC International is recognized world-wide for quality instructor training. PDIC has 30 years experience in dive instruction, development, and teaching. Send for more information. See ad pg 106

DIVE EQUIPMENT

- 4. BROWNIE'S THIRD LUNG Four-color pictures, descriptions, and specs on wide choice of surface supplied air and tank-fill compressor systems. 1-800-327-0412 See ad pg 116
- 5. DIV-AIRE, INC. Manufacturer of the most technologically advanced snorkel available today. Patented two-valve design and hydrodynamic styling makes Div-Aire the most desirable snorkel in the world. See ad pg 18
- 6. PREMIER DIVE CASE 1-800-446-4910 See ad pg 116
- 7. SHERWOOD SCUBA A manufacturer of high quality recreational scuba equipment. Their 32-page full-color catalog provides photos and descriptions of all Sherwood products.
- 8. SPORTS SUITS OF AUSTRALIA Color brochure from the original and world's largest selling lyrca dive skin manufacturer. See the new Darlex Thermaflex suits. "The original is still the best!" See ad pg 91
- 9. SUBSEA VIDEO SYSTEMS See ad pg 116
- 10. ZEAGLE SYSTEMS, INC. See ad pg 93

DIVE RETAIL STORES

- 11. ECOSCOPES DIVE & ADVENTURE OUTFITTERS Kona, Hawaii PADI 5 Star IDC, Great Dive Packages, 43' Dive Boat, Manta Dives, Lava Dives. 1-800-949-DIVE See ad pg 114

DIVE TRAVEL & DESTINATIONS

- 12. ABYSS PRO DIVE CENTER Clean, roomy, 34-foot, 6-passenger dive boat. Underwater video and camera rental. Dive /motel packages from \$63.00. 1-800-451-0134. See ad pg 115
- 13. ADVENTURE EXPRESS Specializing in Australia and the South Pacific, both above and below the water. Free color brochure includes boats, resorts, and tours for all price ranges. Call 1-800-443-0799. See ad pg 114
- 14. ADVENTURE EXPRESS See ad pg 108
- 15. ADVENTURE EXPRESS/BORNEO CO-OP See ad pg 114
- 16. AGGRESSOR FLEET See ad pg 100
- 17. ANCHORAGE INN See ad pg 105
- 18. ARUBA PALM BEACH RESORT UNIQUE SPORTS Free color brochure of resorts. Also, dive brochure with package prices and dive sites. 1-800-345-7782. See ad pg 83
- 19. ARUBA TOURISM AUTHORITY See ad pg 83
- 20. AUSTRALIAN RESORTS Experience the Great Barrier Reef up close and unspoiled while diving the world famous Cod Hole, Lizard Island, Australia/USA at 1-800-925-5122 or Canada at 1-800-448-9400. See ad pg 8
- 21. BAHAMA ISLAND DIVER 1-800-398-DIVE See ad pg 90
- 22. BAHAMAS ISLAND ADVENTURES Call for a free full color brochure/rate card with over 15 photographs of the resort. Diving, dive boat, and Bimini. All-inclusive packages from \$349. See ad pg 112
- 23. BAHIA TOURS Dive travel wholesaler for the Caribbean. Rustic to luxurious, laid back to gambling. Magnificent live-abards. Jungle adventure to romantic white sand beaches. Free information. 1-800-443-0717. See ad pg 115
- 24. BARBANCOURT TOURS See ad pg 109
- 25. BAYMAN BAY CLUB Bay Islands, Honduras. Secluded hillside cottages overlooking private bay and beach. Celebrating our 19th year, same owner since 1974. Rated #2 dive destination in the Caribbean. 1-800-524-1823 See ad pg 114
- 26. BIMINI UNDERSEAS ADVENTURES The superb diving of Bimini along with the best diving value in the Bahamas. 1-800-348-4644. See ad pg 21
- 27. BOLONGO BAY BEACH RESORT 1-800-262-7686 See ad pg 70
- 28. BUDDY BEACH & DIVE RESORT 1-800-359-0747 See ad pg 22
- 29. CAPTAIN DON'S HABITAT All will receive a 6-panel color brochure of property with separate current rate sheet and any special promotions presently being offered by Captain Don's Habitat. 1-800-327-6709 See ad pg 22
- 30. CAPTAINS QUARTERS A 10-room inn, many rooms with antique four-poster beds, private bath, and balcony. All with breathtaking views. Garden dining, pavilion and pool. See ad pg 24
- 31. CARIBBEAN ADVENTURES Free information on dive travel to the Caribbean, Mexico, and Central America. Special trips scheduled for beginners and experienced divers. Call 1-800-934-DIVE. See ad pg 115
- 32. CAYMAN ISLANDS DEPARTMENT OF TOURISM Elegant British Caribbean Island trio with crystal-clear waters, relaxing beaches, safe world-famous diving, fishing, and warm, hospitable people. For a free brochure, call 1-800-346-3313
- 33. CITRUS COUNTY TOURIST DEVELOPMENT COUNCIL Citrus County on Florida's Nature Coast. More manatees and golf courses per capita than anywhere else. Also, great fishing. Right on the Gulf of Mexico. See ad pg 110
- 34. CLUB MED SALES, INC. See ad pg 95, 97, 99 & 101
- 35. CONTINENTAL AIRLINES See ad pg 24
- 36. CORAL BAY CRUISES Dive spectacular walls of Conception Island and San Salvador. Swim with spotted wild dolphins. Observe humpback whales on the Silver Bank. 1-800-433-7262 See ad pg 115
- 37. DIVE DIVE DIVE Detailed information on Nitrox. Complete dive package information. Tongue or ocean diving. 1-800-368-3483 See ad pg 107

38. DIVER'S HAVEN See ad pg 105

- 39. DIVI RESORTS Air-conditioned guest studios. Two freshwater pools and dive Bonaire's extensive fleet together with photo and video instruction. 1-800-367-3484 See ad pg 22

40. FANTASY DIVE See ad pg 115

- 41. FANTASY ISLAND BEACH RESORT Resort on a palm-studded, 17-acre island. Lavishly landscaped with natural flora, 70 beachfront rooms, fully air-conditioned, superb diving, off-shore diving, and 5 dive boats. 1-800-676-2826 See ad pg 84

42. GINNIE SPRINGS DIVE CENTER Nine crystal clear springs. Basic three cavern/cave certification. Full service dive shop. Camping. Send for information packet. See ad pg 113

43. GO DIVING 1-800-328-5285 See ad pg 106

44. GREAT SOUTHERN See ad pg 115

- 45. HAWAIIAN DIVERS Technical and recreational diving in Kona, PADI and SSI instruction, deep dives, manta and whale dives. 1-800-356-2243 See ad pg 114

46. INTERNATIONAL DIVING EXPEDITIONS See ad pg 108

- 47. ISLAND DREAMS TRAVEL World-wide dive travel experts, Caribbean and Pacific, land-based and live-aboards. Make your Island Dreams come true. Call 1-800-628-3733. See ad pg 72

48. ISLAND DREAMS/BORNEO CO-OP See ad pg 114

- 49. JULIANNA'S Your hosts own and operate a small group of charming guest room and Saban style three-bedroom cottage. Restaurant and pool. 1-800-344-4606 See ad pg 24

50. LADY GOODIVER CHARTERS British Columbia Getaway aboard 110' M.V. Lady Goodiver. Liveaboard charters. Diving, cruises, whale watching. Unit #381, Box 9060, Surrey, B.C. V3T 5P8. Phone 604-220-7187 See ad pg 115

- 51. LOW KEY WATERSPORTS 1-800-952-7718 See ad pg 90

52. CAPTAIN DON'S HABITAT All will receive a 6-panel color brochure with separate current rate sheet and any special promotions presently being offered by Captain Don's Habitat. 1-800-327-6709. See ad pg 89

53. MANTA RAY & YAP DIVERS Send for current rate sheets, brochure, current Yap Divers newsletter, plus available magazine reprints. See ad pg 114

- 54. MIKE BALL DIVE EXPEDITIONS Australia's best dives. Expeditions suitable for the adventurous diver seeking big fish action, deep walls, shark action, or wreck dives at Great Barrier Reef and Coral Sea. 1-800-952-4319. See ad pg 86

55. NEKTON DIVING CRUISES Introducing a remarkable live-aboard designed for smooth sailing and hassle-free diving. Departs Ft. Lauderdale to remote Bahamas. Send for information and itinerary of maiden voyages. 1-800-899-6753. See ad pg 105

56. PARROTS LANDING See ad pg 10, 11

- 57. PEACE DIVE BOAT Dive the Channel Islands, day trips (\$5-\$75) and multi-day trips available. All trips include food and air. 1-800-658-8286. See ad pg 115

58. PLAZA LAS GLORIAS/CABO AQUADEPORTES Explore Cabo San Lucas from the Hotel Plaza Las Glorias. Dive the thrilling Sea of Cortez with Cabo Aquadeportes. Call Plaza Vacations 1-800-635-8483 for information and reservations. See ad pg 28

59. PUERTO RICO TOURISM See ad pg 6, 7

60. RALPHIES See ad pg 9

- 61. RED SAIL SPORTS Premiere watersports operator. World-class diving in Aruba, Grand Cayman, and Hawaii. Custom dive boats, top of the line equipment, dive packages with and without accommodations. 1-800-255-6425. See ad pg 83

62. REEF WATCHERS See ad pg 114

- 63. RIDING ROCK INN Dive with San Salvador's experts. Wall diving at its best! Packages include accommodations, 3 meals daily, 3 dives daily. Special charter flights from Ft. Lauderdale. 1-800-372-1492. See ad pg 113

64. ROATAN CHARTERS Honduras adventure travel catalog and Cocoview Resort and Utila Lodge. 1-800-282-8932. See ad pg 114

65. S.E.A. SCUBA Aruba's only dual-rated, NAUI pro facility and PADI training center. Seaport Market, formerly Harbour town location. Instruction, sale and service. Scubapro equipment, 40' dive boat. Packages available. 1-800-999-9406. See ad pg 83

66. SABA DEEP DIVE CENTER The original "dive shop" on Saba, offers personalized service to groups of any size. NAUI, PADI, AUCU, CMAS. Restaurant and boutique. Complete dive packages available. Come and enjoy our quiet world. Down deep we care. See ad pg 24

67. SABA TOURIST BUREAU Saba, "The Unspoiled Queen of the Dutch Caribbean." Experience this tiny piece of paradise firsthand. Crystal-clear waters, rainforest, quaint villages, and friendly people. See ad pg 24

68. SAMS DIVE TOURS See ad pg 114

69. SAND DOLLAR CONDOMINIUMS 1-800-288-4773 See ad pg 20

- 70. SCUBA BIMINI Just 20 minutes away from Ft. Lauderdale, Bimini offers world-class diving in an unburdened, relaxed atmosphere. 1-800-848-4073. See ad pg 105

71. SEASABA Expert staff of 7 instructors (SSI & PADI) offers complete diving packages with hotels, villas, or cottages within a tropical rain forest. Two 40' underground boats. See ad pg 24

72. SEA SAFARI TRAVEL Works with many destinations and gets feedback from its dive travel experts. Let us know which area interests you. By divers, for divers. 1-800-821-6670. See ad pg 36

73. SEA SAFARIS/CABO Sea Safaris with the classic Cabo hotel, The Hotel Solmar and Cabo's most experienced dive operation, Amigos Del Mar, team up to give you great value and world-class diving. 1-800-821-6670. See ad pg 107

74. SEA SAFARIS/COZUMEL CO-OP Sea Safaris / Hotel Plaza Las Glorias/Diamond Resort Cozumel Co. Diamond all-inclusive resort just 5 minutes to Palancar Reef. Plaza Las Glorias walk to town. Cozumel's best value! 1-800-821-6670. See ad pg 9

75. SEA SAFARIS/QUABBIN CO-OP Quabbin Dives. Cayman's second oldest dive operation offers Free shore diving, Free hotel/condo p/u, 1 Free for every 10 paid, wall dives, wreck dives, sting ray city, computer dives. 1-800-821-6670. See ad pg 104

- 76. SEA SAFARIS/SOLMAR V Sea Safaris and Baja's BEST live-aboard, the Solmar V, introduce world-class diving to the remote sites in Baja. 4-7 night trips to Gorda Banks, Cabo Pulmo, La Paz, and Socorro Islands. BIG FISH! 1-800-821-6670. See ad pg 94

77. SEAPORT VILLAGE Stay at the Aruba Sonesta Hotel and Beach Club and Casino or Aruba Sonesta Suites and experience Aruba's sensational dive sites with Red Sail Sports plus five spectacular beaches and the exciting nightife of Seaport Village. See ad pg 83

78. STELLA MARIS INN You design your dream vacation, select from countless adventure and tropical leisure dives. Ask us how. Stella Maris, Long Island, Bahamas. 1-800-426-0466. See ad pg 115

79. SUNSET RESORTS From hotels on Bonaire's finest beach, to deluxe oceanfront apartments, to an assortment of oceanfront self-contained private villas, to a comfortable, economy inn, call 1-800-344-4439. See ad pg 22

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81. TROPICAL OCEAN ADVENTURES See ad pg 115

82. UNITED STATES VIRGIN ISLANDS See ad pg 29

83. WILDLIFE SAFARI Offers custom designed and guaranteed scuba and safari departures to Kenya, Seychelles, Mauritius, and Egypt. Send for your color brochure! 1-800-221-8118. See ad pg 115

84. WINAIR See ad pg 24

85. FIESTA AMERICANA COZUMEL Five-star property with unique location as closest dive-oriented property to major reefs. Receive new, informative brochure, plus rate and package card. 1-800-FIESTA-I. See ad pg 103

SPECIAL AD SECTION-FLORIDA KEYS

86. AMY SLATE'S DIVE AMORAY DIVE RESORT See ad pg 68

87. AQUA NUTS See ad pg 64

88. BUD N' MARY'S Dive Islamorada in the Florida Keys. See ad pg 67

89. THE DIVING SITE Quality service and outstanding diving in the Middle Keys, including wreck dives. Instruction and hotel packages available. 1-800-634-3935. See ad pg 67

90. KEY WEST PRO DIVE Diving and lodging packages in America's premiere dive destination. 1-800-426-0707. See ad pg 68

91. THE LOWER KEYS For more information and a free brochure on Big Pine Key and the Lower Keys, call 1-800-USA-ESCAPE. See ad pg 66

92. OCEAN QUEST DIVE CENTER PADI 5-Star IOC facility offers all levels of instruction. Dive/hotel packages available at the most convenient resort in the Keys. See ad pg 65

93. SOUTHPOINT DIVERS Dive Key West with Southpoint Divers, a full-service PADI training facility offering wreck, reef, night and specialty dives. Two trips daily. Hotel packages. 1-800-824-6811. See ad pg 67

94. TAVERNIER DIVE CENTER Most convenient dive resort in the Florida Keys. Tavernier Diving Center and Tropic Vista Motel. Walk out of your room onto our boats. 1-800-537-3253. See ad pg 64

95. VIEWFINDERS DIVE CENTER INC. Dive travel information (Key West) and dive education including instructor training. See ad pg 68

96. SEND ALL INFORMATION FROM THIS SPECIAL AD SECTION/FLORIDA KEYS See ad pg 102

MISCELLANEOUS

97. DARLINGTON FABRICS CORP. 3RD COVER

98. ENVISIONS LTD. Collectables & wearables for the diving enthusiast! Embroidered leather or denim jackets, sweatshirts, Magic mug or tankard, brass ornament. 1-800-724-3728. See ad pg 116

99. MACLEAR & HARRIS INC. Description of services for the acquisition of live-aboard dive boats including: design, engineering, conversion, vessel search, new construction, launches, day-boats, sailboats. See ad pg 116

100. NORDICTRACK/NORDIC SKI The NordicTrack patented flywheel and one-way clutch give you the most effective way to get in shape. Free video and brochure. Call 1-800-328-5888 ext. 78DX3. See ad pg 109

101. NORDICTRACK/NORDIC SPORT See ad pg 73

102. PROFORM FITNESS PRODUCTS, INC./CROSSTRAINER For a free brochure, please call 1-800-727-9777-K291. See ad pg 85

103. PROFORM FITNESS PRODUCTS, INC./CROSSWALK For a free brochure, please call 1-800-727-9777-K291. See ad pg 98

104. TECHNASALES Beach diving and lobster catching guide, Vero Beach area, Florida's Treasure Coast, 25 public access beach dive sites, reefs, accessible wrecks, map & illustrations, \$9.00. See ad pg 116

PHOTOGRAPHY

105. THE GREAT BONAIRE UNDERWATER VIDEO CHALLENGE See ad pg 62

106. SEA & SEA CAMERAS See ad pg 3

107. UNDERWATER PHOTO-TECH Your complete u/w service center, which includes repairs of underwater camera systems, custom modifications, rentals, sales, and accessories. Makers of the famous body cap. See ad pg 116

SUBJECT TO CHANGE

*JANUARY 94 offer expires April 30, 1994

THE ABCS OF BCs

(Continued from page 86)

waters. Unless you carry a large number of heavy objects, your BC lift needs can be estimated on the basis of wetsuit buoyancy and reserve.

STEP 1: Suit Compression

If you use any type of neoprene wetsuit, your BC must be able to compensate for its loss of buoyancy at depth. The neoprene fabric used to make wetsuits is a synthetic rubber filled with tiny bubbles of nitrogen. As you descend, the increasing pressure causes the nitrogen bubbles to get smaller, so the suit compresses at depth, losing some of its insulating properties and buoyancy. The bigger the suit, the thicker the material, the more parts to the suit (full jacket and pants, hood, vest, etc.) and the newer and the higher quality the suit, the greater the buoyancy change will be.

To find out how big that change might be, we tested the buoyancy of divers wearing quarter-inch wetsuits. Our tests included both men and women of small, average and large sizes. We tested them at the surface, at 33 feet, 66 feet, 99 feet and 132 feet. While all suits were a quarter-inch (6.5 mm), a wide variety of styles was used to determine how age, quality and body coverage affected buoyancy.

Consult the chart included on the worksheet to estimate the amount of buoyancy loss due to wetsuit compression for the maximum depth you plan to dive. Unfortunately we don't have data for wetsuits of thicknesses other than a quarter-inch, but this chart will give you a starting point. With less wetsuit coverage, you'll need less buoyant lift, with more coverage you'll need more lift.

STEP 2: Mid-Inflation and Reserve

As discussed above, you'll want enough buoyant lift to use your BC comfortably half-inflated and to provide a reserve. To calculate the total buoyancy you need in a BC, multiply the number you reached in step 1 by 2.5. This allows you to use the BC at less than one-half inflation, provides a reserve and accounts for variations due to objects carried and air consumed. This

number represents the approximate amount of lift you should look for in a BC used in temperate waters.

BC TECHNIQUE

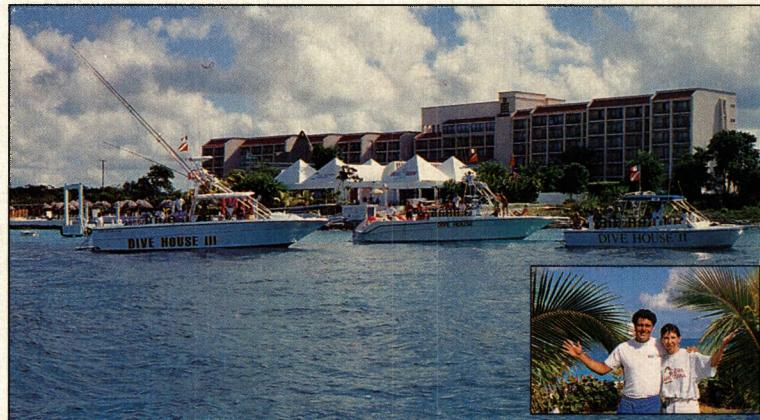
How you use your BC is as important as getting the right one. Here are some techniques you can work on that will improve your comfort and safety.

Buoyancy check: The first and most important step is to establish neutral buoyancy through a buoyancy check.

There's a lot of confusion about buoyancy checks. As a result, many divers use too little or too much weight.

The idea is to establish an amount of weight on your belt that will make you neutral. The question, however, is how and when? Years ago, the procedure was to make the diver neutral on the surface in full gear before the dive. That no longer works. Good diving practice now dictates that you make a safety stop at 10 to 15 feet for three min-

COZUMEL



THE BEST COMBINATION FOR YOUR DIVE VACATION

For your long awaited dive vacation, the Dive House and the Fiesta Americana Cozumel Reef offer you the perfect combination of great safe diving and dive-oriented leisure comfort.

Private pier, oceanfront rooms, locker room by the pier for your gear, restaurants, great beach diving and snorkeling, small and large custom built boats for individuals or groups.

Make sure you get real value for your time and money!

For reservations, see your travel agent, or call:

1-800-FIESTA-1

For groups call Cozumel direct

phone 011-52-(987) 226-22/fax 011-52-(987) 226-66


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DIVE HOUSE

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QUABBIN DIVES THE CAYMAN ISLANDS' QUINTESSENTIAL DIVE EXPERIENCE

Now in our 14th year serving divers in Cayman, Quabbin knows what you expect when you travel to the crystal warm waters of the Cayman Islands...

- Free hotel/condo pick-up and drop-off
- Free shore dives with packages
- 1 diver free with every 10 paid
 - Full rental program
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104 • RODALE'S SCUBA DIVING

utes before surfacing at the end of a dive. In order to hang there safely and comfortably, you need to be neutral at the end of the dive in 10 feet of water. Aluminum tanks, in particular, are more buoyant at the end of the dive than at the beginning, often causing buoyancy problems at this critical time. So here's the drill: With 500 psi in your tank and no air in your BC, hang in an upright position on a line or lie on the bottom at 15 feet. Without moving your arms or legs, breathe normally. If you tend to float to the surface, add some weight. If you sink, take weight off.

Breathing: Experienced divers use their lungs to fine-tune their buoyancy. Without holding your breath, you can vary your buoyancy by varying the amount of air you take in your lungs with each breath. You don't use your entire lung volume each time you breathe; under relaxed circumstances, in fact, you may respire less than half of your total lung volume with each breath. That means there's some reserve buoyancy built into your chest. How much? Testing a cross section of divers, we found that the range of buoyancy change per normal breath was three to six pounds. With maximum breaths, the range was eight to 10 pounds.

So, if you feel yourself sinking slightly during the dive, you can just not breathe out as much, and you'll float up. Exhale a bit more and you'll sink.

Keep in mind that we're not talking about skip breathing or about breathing shallowly to the point of interfering with the exchange of oxygen and CO₂, or of risking a lung overpressure injury. Most divers should be able to vary their buoyancy two to three pounds without undue effort, and perhaps by four to six pounds with a thoughtful change in breathing.

Controlling ascents: Losing control and ascending rapidly is a real concern as it can lead to overpressure injuries. To ascend slowly and make the required safety stop, you have to be in control of your ascent. When power inflators first arrived on the scene, there was a great hue and cry that they would fail and divers would be injured rocketing to the surface. That hasn't happened to any significant degree.

To fully understand how BCs

Test We Must

"But really, didn't you just jump in the water with these things and swim around a little?" You'd be surprised how many times we've been asked that by members of the dive community. No. We really didn't "just swim around." As with all our product tests, we designed a complete testing protocol that involved divers and a variety of test equipment in open water.

To test buoyancy and wetsuit compression, we rigged a trapeze with a dial-reading scale attached to it. Divers were hung from this scale to measure their weight in water and to calculate the effect of lung volume changes. The tests were repeated many times for each diver and each test to make sure that the numbers were repeatable and not the result of some fluke or unknown variable.

A video camera with an on-screen timer was used for time tests. For example, to time inflation rates, divers were strapped to an anchor and videotaped as they held down their power inflators until the BC's overpressure valve popped. To test deflation rates, the camera recorded them from the time they opened the deflator until the last bubbles cleared the valve. Ascents were timed in a similar way, with divers taped as they hung at the starting depth, initiated their inflators and raced toward the surface. A marker was tied off at 10 feet so the ascent could be broken into three stages (from inflation to lift-off, lift-off to 10 feet, and 10 feet to the surface).

In addition to these human tests, a variety of wetsuits were floated in the ocean, tied to scales at depth, and their loss of buoyancy compared to results from similar tests done in a recompression chamber.

affect ascent rates, we tested models with a variety of lift capacities. After fully inflating their BCs, our test divers made ascents from depths of 15, 33, 66 and 99 feet. These tests were done as the first event of the day with healthy, experienced divers.

Dive computers call for ascent rates between 20 and 60 feet per minute. However, divers in the field ascend at rates between 60 and 180 feet per minute unless there is some way for them to monitor their rate (with a computer, for example). It's just too difficult to come up slowly.

When we tested our divers, we found:

- If all other variables are equal, a large-lift BC will make you ascend faster than a lower-lift BC.

- All rapid ascents could be stopped with BC dump valves provided the dump was activated in mid-water,

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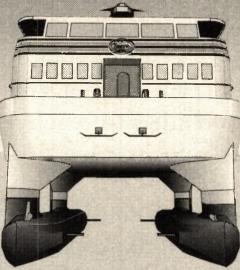
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not near the surface.

• Flaring out arms and legs near the surface slowed the rate of ascent by one-half and, in most cases, caused the divers to surface in a face-up position.

• For ascents from 33 feet and below, the divers tended to reach a maximum upward velocity regardless of the starting depth.

• Some divers became unstable in shallow water, and this slowed their ascents by one to two feet per second.

• Unless a diver dumped air, flared or became unstable, the ascent rate ranged from two to five feet per second (120 to 300 feet per minute) and this rate did not increase as the diver reached the surface.

Our conclusion from these results is simple: Use the lowest-lift BC adequate for your diving and, if you get into an uncontrolled ascent, relax, breathe easy, look up, dump the BC, and flare. ☺

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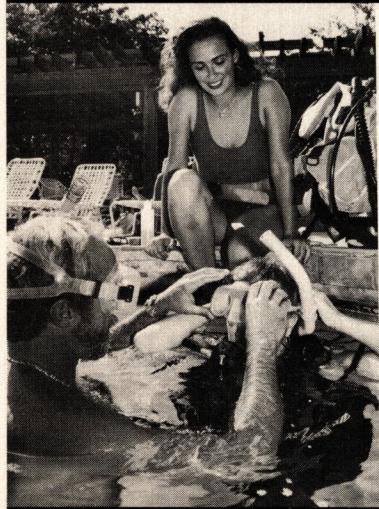
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30 Million Years B.B.C.

Though starting a dive today without one is nearly inconceivable, it took years for the buoyancy compensator (BC) to catch on—about 30 years, actually. But for those of us who lived through the evolution, it seemed more like 30 million.

1950s: This was the era of steel weights, no BCs and no instruments. By today's standards, every ascent was an emergency: We weighted for our most common depth, fought our way down, dived until low on air, then headed for the surface without making a safety stop.

1950s-1960s: A lot of divers got in trouble on the surface. We knew that their problems most likely started under water, but the situation didn't become obvious until they surfaced. To help them cope, flotation devices came into being. These ranged from recycled bleach bottles that could be filled with air to rescue packs (inflatable "water wings" worn on the weight belt that did, occasionally, work). Divers stole life vests from airlines and bought Mae West vests from military surplus stores.

1960s: Slowly an idea started getting around: These flotation devices could be used during a dive to make diving easier. At first, this concept was opposed by many divers. Only sissies used a flotation device to rest or swim on the surface. Besides, they were hard to use—the best of them had a "soda straw" oral inflator that required you to push in and blow simultaneously.

1960s-1970s: A device that could put air into the flotation unit directly from the tank came along and revolutionized what we were now calling buoyancy control. We struggled with what to call it: mechanical inflator, pneumatic inflator, automatic inflator, LP inflator until—finally—power inflator seemed to catch on.

1970s: The true BC finally appeared. With these you had several ways to put air in and let it out. At the beginning of the decade, really rugged divers liked the Fenzy vest, a "horse collar" style BC that incorporated a pony bottle for inflation.

Manufacturers began to innovate, and back-mounted and jacket-style BCs first appeared, challenging the dominance of horse collar models.

1980s: Horse collar BCs died out early in the decade and manufacturers concentrated on improving their jacket and back-mounted BCs. At first, most jackets were orange. Then other colors began appearing, along with a variety of sizes and new features.

1990s: Continuous incremental improvements to BCs have made them more comfortable, easier to use and thereby safer. During 30 years of evolution, BC technology has consistently outpaced our understanding of how to best use these devices—a gap that can, hopefully, be closed in this decade.

NEW ORLEANS

(Continued from page 70)

who spent several years divemastering around the Caribbean, prefers oil rig diving to any he has ever done. "It's the diversity," he says. "There's a different marine environment at each level of a rig, from shallow to deep. As an instructor I like the constant reference provided by the stanchions." But most of all there's the beauty. Swimming weightless through the maze of legs towering above is like worshiping in an "underwater cathedral," Baquet believes.

It's an apt analogy: The sun forces its way through the water in cones of light that play among the dizzy geometry of the stanchions like beams through a dome of stained glass. Each strut is an encrusted pillar of life, its own world of sponges, crabs, lobsters, blennies, zealous damsels and a symphony of chattering barnacles, millions of them that make the water literally pop with life. You'll also be reminded of Bonaire's Town Pier, which some consider the world's greatest night dive. A safe shelter and buckets of tasty trash from above, like manna from heaven, have made both macro paradises.

These open-water structures draw not only the big game fish but also primordial herds of Atlantic spadefish, squadrons of triggerfish that I watched sometimes envelop a hunter and his catch, and a flashing school of white-tip sharks. Scraping barnacles off one of the stanchions with a dive knife created a feeding frenzy among platoons of sheepshead and lookdowns.

In a way the rigs are like New Orleans itself: both give you the feeling that something's always going on, even if you can't see it. And after leaving, the ordinary world seems more vivid, full of light and music and fun. Then, a few days later, you suddenly realize, hey, I miss that place.

That's when you know that New Orleans and the rigs have cast their spell. Soon you'll be headed back. Gonna have big fun, Thibodaux.

Spearfishing reminded Managing Editor David Taylor that pre-packaged fish fillets don't just wash up on the beach.

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CIRCLE NO. 14

CIRCLE NO. 46

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WATER PLANET

(Continued from page 118)

and dolphins on display in its four parks.

But the issue, to many, was not inhumane captivity, but captivity itself. Throughout the summer, "Free Willy" protests arose on behalf of other theme park orcas—Corky in San Diego, Katina in Orlando and others—and Anheuser-Busch, owner of Sea World, was threatened with a boycott. There was as much heat as light, but shining through all the arguments was an important question: Could we acknowledge the animals' obvious intelligence and, solely for our own amusement and profit, still deny them freedom?

Eskimo Whaling vs. Big Oil

Since the early 1970s, native Alaskans have used both commendable political savvy and sure public relations skills to defend their traditional way of life. Known locally, and with some pride, as "the subsistence lifestyle," it has long included the right to hunt a small number of whales. Perhaps inspired by the "Free Willy" debate in the Lower 48, in August the Alaska Eskimo Whaling Commission not only filed suit against the Atlantic Richfield Corporation (ARCO), one of the principal oil companies drilling on the North Slope, to stop development of a new offshore tract, but also threatened to use their whale boats to hinder exploration activities. At issue, said a native Alaskan spokesperson, was the possibility that ARCO's seismic work would negatively affect whale migratory patterns.

More Cetacean Legal Affairs

Did you see the "I Witness Video" segment more than a year ago where a professional underwater model in Hawaii was petting a friendly 20-foot pilot whale when it suddenly closed its jaws on her leg and dragged her 40 feet under water, holding her for almost a minute? Last summer the federal government decided to charge the woman with harassing the whale in violation of the 1972 Marine Mammal Protection Act. Said an attorney from the U.S.

National Oceanic and Atmospheric Administration, "We are not here to protect humans. We are here to protect the animals."

Swords Into Plowshares

With the close of the Cold War, some exotic military technology has been turned to peaceful purposes. Last July, the Navy and Cornell University revealed the results of a six-month experiment that used a seafloor submarine surveillance system to track whales in the Atlantic Ocean. "In an hour of sound recording," said the chief scientist of the project, "[we] collected more evidence of whale activity than most scientists could collect in a lifetime."

The project tracked six different species, ranging from 50-foot, 30-ton gray whales to 100-foot, 150-ton blues. It was also able to follow selected individual animals for 1,500 miles over a 40-day period. Interesting findings included the fact that whales' infrasound vocalizations (185dB at 90Hz) carry easily from Puerto Rico to Canada, that they make wide use of sonar to navigate the oceanic basins and that contrary to the prevailing theories of coastal migration many whales migrate in the Atlantic deeps. So perhaps the poet Matthew Arnold (1822-1888) was right after all. In "The Forsaken Merman," he wrote:

*Sand-strewn caverns, cool and
deep,
Where the winds are all asleep;
Where the spent lights quiver and
gleam;
Where the salt weed sways in the
stream . . .
Where great whales come sailing
by,
Sail and sail, with unshut eye,
Round the world for ever and
aye?*

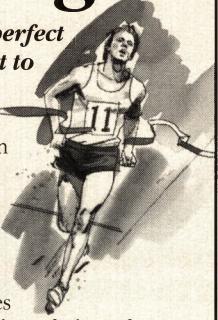
Items: Sadness and Science

Every summer has its news of whale strandings, sometimes as many as a dozen a season. The headlines from last August's *The New York Times* told the sad but typical story of a pilot whale stranded in the Bronx's Pelham Bay, an arm of Long Island Sound: "Wayward Young Pilot Whale Harassed in Shal-

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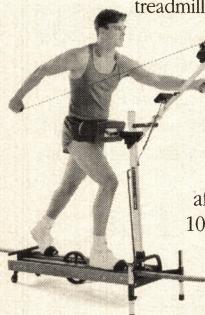
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CIRCLE NO. 100 ON READER SERVICE CARD

low Waters" (Aug. 2); "Crews Trying Again To Drive Whale to Sea" (Aug. 3); "Stray Whale Is Herded Toward Uncertain Fate" (Aug. 4); "Veterinarians at Aquarium Examine a Wayward Whale" (Aug. 6); "Wayward Whale Is Showing Signs of Swimming Problems" (Aug. 9). The stranding stories almost always end the same.

Sometimes, however, at least science is served. In late July, a Minke whale pup (*Balaenoptera acutorostrata*) was found stranded but alive on a jetty in Newport Beach, Calif. Minke (pronounced "minky") whales are small, 25 to 30 feet long when mature, solitary and quite rare in U.S. waters. Despite heroic ministrations, the pup, nicknamed "Rocky," survived less than 24 hours, but both alive and later on the dissection table, the young whale made a substantial contribution to the sum of our scientific knowledge.

Last But Not Least

Finally, after all the filmic, philosophical, fractious, frivolous and forensic whale reportage that appeared last summer, *The Really Bad News*: Last June, for the first time since the International Whaling Commission imposed a moratorium in 1986, man began commercially killing whales again. The prey was, like Rocky, the Minke; the predators for profit, Norwegians. There was talk in Norway of a government limit of only 160 whales, as well as arguments centered on notions that sounded not unlike "subsistence lifestyle." In retaliation, there was also serious consideration of a broad U.S. embargo of all Norwegian imports, worth more than \$2 billion a year. "There's no reason to protect them," one Norwegian whaler in a fishing village in the far north was reported to have said. "They're plentiful. Killing a Minke is no different from killing a deer."

The summer was now over, and there was blood in the wake of the whale.

Contributing editor David Abrahamson writes on natural history and environmental subjects for a number of national magazines, including *The New York Times Magazine*, *Oceans* and *Science*.



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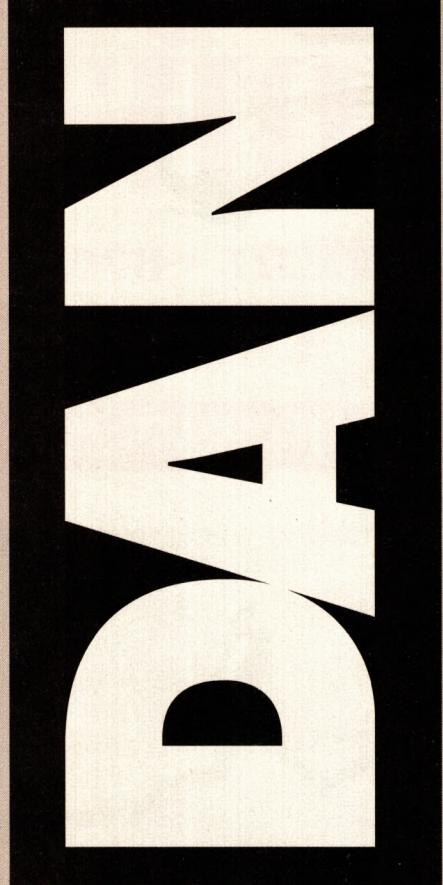
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DIVERS ALERT NETWORK

AROUND THE BENDS

To prevent permanent damage from decompression sickness, know the symptoms and get treatment early.

By Joel Dovenbarger, R.N.

How much do you know about early treatment of decompression sickness (DCS)? Here's a quick quiz:

You've just completed a terrific boat dive and have been rinsing off and changing out your tanks for about 20 minutes in preparation for

the next dive. Your fingers start to tingle and you're feeling a bit dizzy. A few minutes later your skin begins to itch. What do you do next?

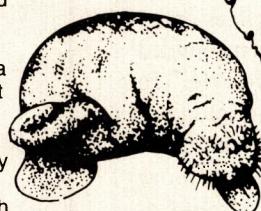
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1. The names and addresses of the publisher, editor and managing editor are:

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Editor: Steve Blount Suite 208, 6600 Abercorn St., Savannah, GA 31405-5840

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2. The owner is: Rodale Press, Inc., 33 E. Minor Street, Emmaus, PA, 18098. The stockholders thereof being Anna Rodale, Ardath Rodale, and the estate of Robert Rodale.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of the total amount of bonds, mortgages, and other securities are: None

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TOWN CREEK	Mike's Scuba & Quarry	(205) 685-DIVE
ALASKA		
ANCHORAGE	Alaska Aquatics	(907) 344-8078
ANCHORAGE	Alaska Mining & Diving	(907) 279-6113
KETCHIKAN	Alaska Diving Services	(907) 225-3667
KODIAK	Scuba Do, Inc.	(907) 486-4344
ARIZONA		
BENTONVILLE	The Dive Adventure Center	(501) 271-8322
BULLHEAD CITY	Dive West of Arizona	(602) 758-7484
BULLHEAD CITY	Water World Scuba	(602) 763-5531
MESA	El Mar Diving Center	(602) 833-2971
PHOENIX	Aqua Sports, Inc.	(602) 955-4120
PHOENIX	Oasis Divers	(602) 992-3093
TUCSON	Adventure Quest	(602) 323-3483
TUCSON	Adventure Fun	(602) 886-3535
TUCSON	Cap'n Dave's Dive Shop	(602) 32-SCUBA
TUCSON	Desert Divers Scuba Center	(602) 888-7300
TUCSON	Dive Shop	(602) 326-2424
ARKANSAS		
BENTONVILLE	The Dive Adventure Center	(501) 271-8322
EL DORADO	South Arkansas Dive Shop	(501) 862-0021
GARFIELD	Lost Bridge Marina	(501) 359-3222
LITTLE ROCK	Crawdaddy's Scuba School	(501) 225-3990
LITTLE ROCK	Rick's Dive & Travel Center	(501) 224-8400
NORTH LITTLE ROCK	Dive Shop	(501) 753-3483
NORTH LITTLE ROCK	Rick's Dive & Travel Center	(501) 753-6004
SPRINGDALE	Sportman's Choice	(501) 751-4560
SPRINGDALE	Sportsco	(501) 751-0636
CALIFORNIA		
ANAHEIM	Underwater Scuba Adventures	(714) 991-3483
AUBURN	High Sierra Divers, Inc.	(916) 823-6757
AVALON	Avalon Aquatics	(800) 677-4275
BAKERSFIELD	Captain Frog Scuba	(805) 833-7378
BAKERSFIELD	Innerspace Divers	(805) 399-1425
BEVERLY HILLS	Reef Seekers Dive Co.	(310) 652-4990
BREA	Sport Chalet Divers	(714) 255-0132
BURBANK	Sport Chalet Divers	(818) 558-3500
CAMERON PARK	Cameron Park Dive Center	(916) 676-3483
CARLSBAD	The Dive Center, Inc.	(619) 729-0808
CAYUCOS	Bill's Sporting Goods	(805) 995-1703
CHICO	Chico Dive Center	(916) 343-2431
COSTA MESA	Bottom Time Scuba	(714) 645-3483
COSTA MESA	Laguna Sea Sports	(714) 645-5820
COVINA	Adventure Diving Center	(818) 858-5761
CYPRESS	Scuba Toys & Schools, Inc.	(714) 527-0430
DAVIS	Ocean Odyssey	(916) 758-3483
DEL MAR	Del Mar OceanSports	(619) 792-1903
DOWNEY	Divers Corner	(310) 869-7702
EL TORO	Black Bart's Aquatics	(714) 855-2323
ENCINITAS	Ocean Enterprises	(619) 942-3662
ESCONDIDO	Rick's Diving Locker	(619) 746-9890
FREMONT	Captain Aqua's Full Service Dive	(510) 490-5597
FORT BRAGG	Sub-surface Progression	(707) 964-3793
FORTUNA	Big Blue Dive	(707) 725-1318
FOUNTAIN VALLEY	Progressive Scuba	(714) 531-3483
FRESNO	Aqua Sports Distributing	(209) 224-0744
FT BRAGG	Bob's Dive Shop of Fresno	(209) 225-3483
GOLETA	North Coast Divers Supply	(707) 961-1143
GOLETA	California Water Sports	(805) 964-0180
GRASS VALLEY	The Dive Locker	(805) 967-4456
GRASS VALLEY	Free Flight	(916) 272-7790
GRASS VALLEY	High Sierra Divers Inc.	(916) 477-7642
GUERNEVILLE	Kings Sport & Tackle	(707) 869-2156
HUNTINGTON BEACH	National Scuba	(714) 847-4386
HUNTINGTON BEACH	Sport Chalet Divers	(714) 848-0988
LA CANADA	Sportland	(818) 790-9800
LA HABRA	Diver's Mart	(310) 694-1311
LA JOLLA	Sport Chalet Water Sport Center	(619) 552-0712
LA MESA	Sport Chalet Divers	(619) 463-9381
LAGUNA BEACH	Laguna Sea Sports	(714) 494-6965
LONG BEACH	New England Divers, Inc.	(310) 421-8939
LONG BEACH	Pacific Sporting Goods	(310) 434-1604
LOS ANGELES	Sport Chalet Divers	(310) 657-3210
MALIBU	Malibu Divers	(310) 456-2396
MANTECA	Aquatech Scuba Center	(209) 825-6520
MARINA DEL REY	Sport Chalet Divers	(310) 821-9400
MISSION VIEJO	Sport Chalet Divers	(714) 582-3363
MODESTO	American Aquatic Adventure	(209) 578-0515
MODESTO	Valley Aquatics	(209) 527-2822
MONTCLAIR	Sport Chalet Divers	(909) 946-1517
MONTEREY	Aquarius Dive Shop	(408) 375-1933
MORRO BAY	Depth Perceptions Diving	(805) 772-3128
NATIONAL CITY	Buhrrow Into Diving	(619) 477-5946
NEWPORT BEACH	Newport Scuba Co.	(714) 631-3280
OCEANSIDE	Underwater Schools of America	(619) 722-7826
ORANGE	Scuba World	(714) 998-6382
OXNARD	Sport Chalet Divers	(805) 485-5222
PASADENA	Pasadena Divers West	(818) 796-4287
PETALUMA	Petaluma Sport Shop & Dive	(707) 763-0930
PLEASANTON	Scuba Unlimited	(510) 734-8343
REDDING	Beyond The Reef Diving	(916) 241-4530
REDLANDS	Empire Scuba	(714) 798-3483
REDONDO BEACH	Dive N' Surf	(310) 372-8423
REDONDO BEACH	Sea D Sea	(310) 373-6355
REDWOOD CITY	Wailin Dive Center	(415) 369-2131
RIVERSIDE	Laguna Sea Sports Of Riverside	(714) 683-6244
ROCKLIN	Nautlius Dive Center	(916) 624-3483
SACRAMENTO	Dolphin Scuba Center	(916) 929-8188
SACRAMENTO	Mother Lode Skin Diving	(916) 466-4041
SAN BERNARDINO	Scuba Adventures Unltd., Inc.	(714) 825-2502
SAN FRANCISCO	Aqua Tech Dive Center	(619) 237-1800
SAN JOSE	Ocean Enterprises	(619) 565-6054
SAN JOSE	San Diego Divers Supply	(619) 224-3565
SAN JOSE	Sport Chalet Divers	(619) 244-6777
SAN JOSE	Bamboo Reef	(415) 362-6694
SAN JOSE	Pacific Offshore Divers	(408) 265-3483
SAN JOSE	Stan's Diving Shop	(408) 998-0767
SAN LUIS OBISPO	Slow Ocean Currents	(805) 544-7227
SAN PEDRO	Marine Dive & Sport	(310) 831-5647
SAN PEDRO	Pacific Wilderness/Ocean Sport	(310) 833-2422
SAN RAFAEL	Marin Skin Diving	(415) 479-4332
SANTA ANA	A1-Stop Non-Stop Scuba Center	(714) 546-6079
SANTA BARBARA	Divers Den	(805) 963-8917
SANTA BARBARA	Santa Barbara Aquatics	(805) 964-8689
SANTA CLARA	Wet Pleasure	(408) 984-5819
SANTA CRUZ	Adventure Sports Unltd.	(408) 458-3648
SANTA MONICA	Ocean Odyssey	(408) 475-3483
SANTA MONICA	Blue Cheer Water Sports	(310) 828-1217
SAUSALITO	Scuba Haus	(310) 828-2916
SOUTH LAGUNA	Harbor Dive Center	(415) 331-0904
STOCKTON	Adventures In Diving	(714) 499-4517
STOCKTON	Scuba Plus	(209) 957-2822
STOCKTON	Stockton Aquatics Center	(209) 467-3483
THOUSAND OAKS	Dive-In Scuba	(805) 497-2822
TULARE	Fantasea Connection	(209) 685-1471
TUSTIN	Openwater Habitat Marine School	(714) OHMS-1111
TWO HARBOR	Two Harbors Dive Shop	(310) 510-0303
VACAVILLE	Sports Cove	(707) 448-9454
VALLEJO	Seahorse Scuba Center, Inc.	(707) 552-8899
VENTURA	Gold Coast Scuba	(805) 652-0321
VENTURA	Ventura Dive & Sport!!!	(805) 650-6500
WALNUT CREEK	Nautlius Aquatics	(510) 930-9310
WEST HILLS	Sport Chalet Divers	(818) 710-0999
WESTMINSTER	Coral Reef Dive/Surf Wetsuit Factory	(714) 894-DIVE
YUBA CITY	Aqua Divers	(916) 671-3483
COLORADO	Scuba Den	(303) 752-2239
BOULDER	Rocky Mountain Diving Center	(303) 449-8606
BOULDER	Weaver's Dive Center	(303) 499-8500
COLORADO SPRINGS	Colorado Springs Scuba Center	(719) 597-8418
DENVER	Denver Divers	(303) 399-2877
EAGLE VAIL	Bever Divers	(800) 748-2969
ENGLEWOOD	A-1 Scuba Center	(303) 789-2450
FORT COLLINS	High Plains Scuba Center	(303) 493-8562
FORT COLLINS	Scuba Colorado	(303) 225-0777
GRAND JUNCTION	Colorado Scubaventures	(303) 245-3483
GRAND JUNCTION	Grand Mesa Scuba Center	(303) 245-8688
GRAND JUNCTION	Sports Ports	(303) 245-7127
LAKWOOD	Colorado Scuba Center	(303) 986-0007
LAKWOOD	Rocky Mtn Diving Center	(303) 232-2400
LAKWOOD	Underwater Phantasmas	(303) 988-6725
LEADVILLE	Bill's Sport Shop, Inc.	(719) 486-0739
LITTLETON	Atlantician Dive & Travel	(303) 972-8993
LITTLETON	Fantasy Divers	(303) 220-0797
LITTLETON	Blue Mesa	(303) 249-3666
THORNTON	Colorado Diver Training Center	(303) 457-2822
VAIL	Beaver Divers	(303) 949-1012
WHEATRIDGE	Scuba Den	(303) 431-1088
CONNECTICUT		
BRIDGEPORT	Orbit Marine	(203) 333-3483
BROOKFIELD	The Diving Bell	(203) 775-3573
ESSEX	Diver's Cove & Sea	(203) 767-1960
GALES FERRY	Aqua Sports Diving Center	(203) 464-7878
MILDALE	International Scuba Center	(203) 621-8265
NORWALK	Rex Marine Center	(203) 831-5236
ROCKY HILL	Scuba Shack	(203) 563-0119
THOMASTON	Central Sales Scuba	(203) 283-5007
VERNON	Win-Sum Sports Ski & Scuba	(203) 872-0113
WEST HAVEN	Underwater Swimmers	(203) 399-0258
WESTBROOK	Beech Nut Sports Center	(203) 399-6534
DELAWARE		
NEWARK	First State Sports, Inc.	(302) 998-6357
WILMINGTON	Posidon Adventures Dive	(302) 656-2326
FLORIDA		
ALTAMONTE SPRINGS	Odyssea Scuba	(407) 788-1165
APALACHICOLA	Apalachicola Divers	(904) 653-9521
BELLEVUE	Earth Science Dive Center	(904) 347-8877
BIG PINE KEY	Innspaces Dive Shop	(305) 872-2319
BIG PINE KEY	Underseas, Inc.	(305) 872-2700
BOCA RATON	American Dive Center, Inc.	(800) 391-0621
BOCA RATON	Boca Seadventures	(407) 391-1474
BOYNTON BEACH	Ameridive Scuba Center	(407) 732-0833
BRADENTON	Ocean Pro Dive Shop, Inc.	(813) 792-3483
BRANFORD	Steamboat Dive Inn	(904) 935-DIVE
CAPE CORAL	Bubbles Unique Dive Shop	(813) 458-1999
CAPTIVA ISLAND	Pieces Of Eight Dive Center	(813) 472-9424
CLEARWATER	Advanced Aquatics	(813) 573-3483
CLEARWATER	Dan's Scuba School	(813) 446-8275
CLEARWATER	Mac's Sports, Inc.	(813) 442-9931
COCOA	Dive Buddies, Inc.	(407) 631-7649
CRESTVIEW	Land Sea & Air	(904) 689-3483
CRYSTAL RIVER	American Pro Dive	(904) 563-0041
CRYSTAL RIVER	Plantation Inn Marina	(904) 795-5797
CRYSTAL RIVER	Port Paradise	(904) 795-3111
DANIA B & B	Aquatic Adventures, Inc.	(305) 920-3322
DAYTONA BEACH	Atlantic Scuba, Inc.	(804) 252-4800
DAYTONA BEACH	Discover Diving Center	(904) 760-DIVE
DE LAND	Divers Oasis Scuba Center	(904) 738-2417
DELAWARE	Jumpin' Jack Splash	(813) 697-6499
FERNANDINA BEACH	Aqua Explorers Dive Center	(904) 261-5989
FERNANDINA BEACH	Nassau Diving Services	(904) 261-5021
FLAGLER BEACH	Caribbean Heat Oceansport	(904) 439-1514
FLORIDA CITY	Diver's Outlet	(800) DIVE-USA
FT LAUDERDALE	Lauderdale Diver	(305) 467-2822
FT LAUDERDALE	Neon Dolphin Dive Shop	(800) 226-8881
FT LAUDERDALE	Pro Dive	(305) 761-3413
FT LAUDERDALE	Underwater Explorers Society	(809) 373-1244
FT MYERS	Dean's Dive Center, Inc.	(813) 255-1111
FT MYERS	Dive Station	(813) 489-1234
FT MYERS	Ken's Sports	(813) 936-7106
GAINESVILLE	Divers Supply Gainesville	(904) 332-4141
GAINESVILLE	Lloyd Bailey's Scuba	(904) 332-0738
GAINESVILLE	Water World Dive Center, Inc.	(904) 377-2822
GULF BREEZE	Gulf Coast Pro Dive, Inc.	(904) 934-4811
HIALEAH	Miami Scuba, Inc.	(305) 620-3507
HIALEAH	Tarpoon Skin Diving Center	(305) 887-8726
HIGH SPRINGS	Ginnie Springs, Inc.	(904) 454-2202
HOLLYWOOD	Divers Unlimited	(305) 981-0156
ISLAMORADA	Rainbow Reef Dive Center	(305) 664-4600
ISLAMORADA	World Down Under	(305) 664-9312
JACKSONVILLE	Aquifer Dive Center	(904) 398-1274
JACKSONVILLE	Atlantic Pro Dive	(904) 246-2401
JENSEN BEACH	Divers Supply East Jax	(904) 646-3828
JENSEN BEACH	Divers Supply West Jax	(904) 778-8854
JUPITER	Mandarin Dive Center	(904) 262-1606
JUPITER	Deep Six Dive/Watersports	(407) 692-2747
KEY LARGO	Admiral Dive	(305) 451-1114
KEY LARGO	American Diving Headquarters	(305) 451-0037
KEY LARGO	Amy Slatte's Amoray Dive Resort	(305) 451-3595
KEY LARGO	Aqua Nuts/Kelly's Motel	(305) 451-0414
KEY LARGO	Captain Corkey's Divers World	(305) 451-3200
KEY LARGO	Diver's Outlet	(800) DIVE-USA
KEY LARGO	Hall's X-Hale Dive Charters	(800) 859-3896
KEY LARGO	Jules' Undersea Lodge	(305) 451-2353
KEY LARGO	Pennekamp State Park Dive Center	(800) 272-4148
KEY LARGO	Pisces Aquatics	(800) 852-3756
KEY LARGO	Quiescence Diving Service	(305) 451-2440
KEY WEST	Admiral Bushy's Coral	(305) 294-0011
KEY WEST	Captain's Corner Dive Center	(305) 296-8918
KEY WEST	Key West Diver, Inc.	(305) 294-7777
KEY WEST	Key West Sail & Dive	(305) 296-0606
KEY WEST	Looker Diving Center	(305) 294-2249
KEY WEST	Lost Reefs Adventures, Inc.	(305) 296-9737
KEY WEST	Promethean Adventures	(305) 294-2772
KEY WEST	Seaclyse Divers	(305) 296-1975
KEY WEST	Southpoint Divers	(305) 292-9778
KEY WEST	Viewfinder Dive Center, Inc.	(305) 292-5000
KIASSIMEE	Kissimmee Pro Dive	(407) 933-5090
LAKE WORTH	Coastal Scuba Center	(407) 547-0022
LAKEWOOD	Jim's Sea Dive Center	(813) 667-1121
LAKEWOOD	Scuba Ecstera	(813) 687-2822
LAND O LAKES	Land O Lakes Scuba Center	(813) 996-3843
LARGO	Sunshine Scuba	(800) 878-DIVE
LEESBURG	Underwater Adventures	(904) 787-0760
LONGWOOD	Scuba Diversions	(407) 695-0991
MARATHON	Abyss Pro Dive Center	(800) 457-0134
MARATHON	Camelot Divers, Inc.	(305) 743-5317
MARATHON	Captain Hook's Marine & Dive	(305) 743-2444
MARATHON	Hall's Diving Center	(305) 743-5929
MARATHON	Multinational Diving Educators	(305) 743-6188
MARATHON	Ocean Adventures Dive Shop	(305) 743-9000
MARATHON	Aqua Adventures	(8

MIAMI	Florida Frogman	(305) 599-9900	KAILUA-KONA	Hawaiian Divers	(800) 329-2243	WICHITA	Adventure Sports, Inc.	(316) 689-8051
MIAMI	H2O Scuba	(305) 956-3483	KAILUA-KONA	Jack's Diving Locker	(800) 345-4807	WICHITA	Midwest Diving Center	(316) 265-3555
MIAMI	T & S Dive Center	(305) 235-6043	KAILUA-KONA	Kona Coast Divers	(800) KOA-DIVE	WICHITA	Oz Travel Ski & Scuba	(316) 684-9738
MIAMI	Underwater Unlimited, Inc.	(305) 445-7837	KAPAA	Aquatic Adventures	(808) 822-1434	KENTUCKY		
MIAMI BEACH	Team Divers South Beach	(800) 543-7887	KAPAA	Nitrox Tropics Divers	(800) 695-DIVE	CERULEAN	Dive Cerulean	(502) 887-3584
MIAMI BEACH	Tropic Divers, Inc.	(305) 673-3755	KAWAIHAE	Kohala Divers, Ltd.	(808) 882-7774	HAZARD	Nemo's Under See Adv	
N. PALM BEACH	Aqua Shop	(407) 848-9042	KEAUHOU BAY	A Sea Paradise Scuba, Inc.	(800) 322-KONA	HYDEN	Nemo's Under See Adv	(606) 279-4572
NAPLES	Naples Diving Center	(813) 775-6220	KIHEI	Bill's Scuba Shack	(808) 879-3483	LEXINGTON	New Horizons	(606) 277-1234
NAPLES	Sandania of Naples	(813) 775-6646	KIHEI	Maui Dive Shop	(808) 879-3388	LOUISVILLE	Kentucky Diving Headquarters	(502) 897-6481
NAPLES	Under Seas Dive Academy	(813) 774-1234	KIHEI	Reef Watchers	(808) 874-3467	LOUISVILLE	Louisville Dive Center	(502) 458-8427
NEW PORT RICHEY	American Scuba	(813) 848-5085	KIHEI-WAILEA	Ed Robinson's Diving Adventures	(800) 635-1273	LOUISVILLE	Watersports	(502) 423-7334
NEW MYRTLE BEACH	Sea Dogs Dive Center	(904) 424-1644	KOLOA	Fathom Five Divers	(808) 822-2837	LUDLOW	Aquarius Dive Shop	(606) 431-8626
NORTH FT MYERS	Underwater Specialists	(813) 656-3483	KOLOA	Kauai Seaports, Inc.	(808) 742-9303	OWENSBORO	Dolphin Dive Center, Inc.	(502) 684-2006
NORTH MIAMI BEACH	Diving Locker	(305) 947-6025	KOLOA	Ocean Odyssey Dive Shop	(808) 742-6731	SOMERSET	Scuba Works	(606) 679-4748
NORTH TAMPA	Action Aquatics	(813) 932-3895	LAHAINA	Captain Nemo's Ocean Emporium	(800) 367-8088	LOUISIANA		
OCALA	Ocala Dive Center	(904) 732-9779	LAHAINA	Dive Maui	(808) 667-2080	ALEXANDRIA	The Water Habitat	(318) 443-5075
OCALA	The Divers Locker	(904) 622-4550	LAHAINA	Lahaina Divers, Inc.	(808) 667-7496	ANACOCO	Dive Toledo Scuba Center	(318) 286-5565
ORLANDO	Hal Watts Mr. Scuba	(407) 896-4541	LAHAINA	Pacific Dive Services	(808) 667-5331	BATON ROUGE	Inspires Dive Center	(504) 272-DIVE
ORLANDO	Jim Hollis' Scuba World	(407) 273-3373	LAHAINA MAUI	John's Scuba Experience	(808) 667-0633	BATON ROUGE	Underwater Adventures	(504) 927-3483
ORLANDO	Odyssey Scuba	(407) 857-2822	MAUI	Central Pacific Divers	(800) 551-6767	BOSSIER CITY	Ernie's Underwater Paradise	(318) 746-2007
ORLANDO	Sun Scuba	(407) 855-5479	MAUI	Hawaiian Reef Divers	(808) 667-7647	DELCAMBRE	Divers Unlimited	(318) 685-2703
PALATKA	Palatka International	(904) 325-4575	PEARL CITY	Aaron's Dive Shop	(808) 487-5533	GRETNA	La Divers	(504) 391-2049
PANAMA CITY	Emerald Coast Diver's Den	(904) 871-2876	WAHIAWA	Rainbow Divers	(800) 982-6747	KENNER	Square World Dive Center	(504) 443-3483
PANAMA CITY BEACH	Hydrospace Dive Shop	(800) 234-9463	WAHIAWA	Ocean Concepts Scuba/PADI	(808) 677-7975	MARRERO	Aqua Tech Dive Center	(504) 341-3483
PANAMA CITY BEACH	Hydrospace Dive Shop	(800) 874-3483	IDAHO			METAIRIE	Caribbean Dive Shop	(504) 831-7071
PANAMA CITY BEACH	Panama City Dive Center	(800) 832-3483	BOISE	Bois Water Sports	(208) 342-1378	METAIRIE	Harry's Dive Shop, Inc.	(504) 888-4882
PEACOCK SPRINGS	Spring Systems Dive Cent	(904) 776-2310	BOISE	The Scuba Diving Co., Inc.	(208) 343-4470	NEW ORLEANS	The Scuba Company	(504) 244-6292
PENSACOLA	Gulf Coast Pro Dive, Inc.	(904) 456-8845	COEUR D'ALENE	Divers West	(208) 664-0751	SHREVEPORT	Scuba Ventures, Inc.	(318) 222-DIVE
PENSACOLA	Pensacola Scuba, Inc.	(904) 478-1020	COEUR E ALENE	Tom's Diving Adventures	(208) 664-0852	WESTWEGO	Temento's Diving Center	(504) 347-5402
PINELLAS PARK	Bill Jackson, Inc.	(813) 577-6378	KETCHUM	Ketchum Dive Adventures	(208) 726-5424	MAINE		
PINELLAS PARK	Tackle Shack Water Sports	(813) 546-5080	LEWISTON	Landlocked Divers	(208) 746-3256	BANGOR	Maine Divers	(207) 990-3483
PLANT CITY	Underwater Adventures Dive Shop	(813) 754-5193	POCATELLO	H & H Dive And Travel	(208) 233-7802	CALAIS	Kissing Fish Dive Shack	(207) 454-7440
POMPANO BEACH	Lighthouse Dive Center	(305) 782-1100	TWIN FALLS	Dive Magic	(208) 733-8203	JONESPORT	Kissing Fish Dive Shack	(207) 454-7440
POMPANO BEACH	Ocean Diving	(305) 785-3483	ILLINOIS			PORTLAND	Tommy's Dive Shop	(207) 772-5357
POMPANO BEACH	Orbit Marine Sports	(305) 942-7333	ALSIP	Scuba Emporium	(708) 389-9410	YORK BEACH	York Beach Scuba	(207) 363-4982
POMPANO BEACH	US 1 Scuba, Inc.	(305) 946-6055	ARLINGTON HTS	Prospect Dive & Sport Shop	(708) 259-0606	MARYLAND		
PONCE DE LEON	Vortex Spring, Inc.	(904) 836-4979	CHICAGO	Adventures In Scuba	(312) 935-DIVE	ANNAPOLIS	Annapolis Scuba Center	(301) 266-8327
PORT CHARLOTTE	Aqua Scuba Dimension, Inc.	(813) 625-3030	CHICAGO	Aquanautes Odyssey	(312) 326-3330	BALTIMORE	Divers Den, Inc.	(410) 668-6866
PORT CHARLOTTE	Dean's Dive Center, Inc.	(813) 255-1111	CHICAGO	Diventure	(312) 348-3483	BEL AIR	Submarine	(410) 838-3483
PUNTA GORDO	Florida Water Safaris	(813) 637-9222	CHICAGO	Underwater Safaris	(312) DIVE-999	BELTSVILLE	River & Sea Water Sports	(301) 595-2867
RAMROD KEY	Looe Key Dive Center	(305) 872-2215	CRYSTAL LAKE	Sea Level Diving	(815) 344-9732	CHESTERTOWN	Buck's Pool & Stove, Inc.	(410) 778-9491
RIVIERA BEACH	Seapro Scuba Center	(407) 844-3483	DECATUR	Pro Dive Shop, Inc.	(217) 428-0599	COLUMBIA	Columbia Scuba, Inc.	(410) 740-0171
SANIBEL ISLAND	Redfish Dive Center	(813) 472-3483	FAIRVIEW HEIGHTS	Mid America Scuba II	(618) 624-8881	ELLICOTT CITY	Bethany Water Sports	(410) 461-3483
SARASOTA	Aqua Sports Unlimited	(813) 751-1173	GLEN ELLYN	Illinois Institute of Diving	(708) HOW-DIVE	FREDERICK	Brass Anchor Scuba Center	(301) 663-9363
SARASOTA	Florida Down Under	(813) 922-3483	HIGHLAND PARK	Frog Pond Dive Shop	(708) 432-5055	HAVRE DE GRACE	East Coast Divers	(410) 939-9030
SARASOTA	Ocean Pro Dive Shop, Inc.	(813) 924-3483	KANKAKEE	Purr-Fect Sport	(815) 937-1413	LAUREL	Snow Kountry Ski & Dive	(301) 776-7575
SEBRING	Sebring Dive Shop	(813) 385-1699	LA GRANGE	Great Lakes Divers	(708) 482-7788	ROCKVILLE	The Scuba Shoppe	(301) 762-6200
SOUTH DAYTONA	Adventure Diving	(904) 788-8050	LAKE FOREST	Ocean's Door	(708) 295-0787	SEVERNA PARK	Sea Colony Aqua Sports	(410) 544-3607
SOUTH TAMPA	Action Aquatics	(813) 835-0062	LAKE ZURICH	Lake Michigan Scuba Center	(708) 540-7211	SHADY SIDE	Chesapeake Underwater Sports	(410) 867-4204
TAMPA	Scuba Haven	(813) 972-4455	LANSING	Goose's Scuba Shack	(708) 474-7380	MASSACHUSETTS		
TAVERNIER	Conch Republic Divers	(305) 852-1655	LIBERTYVILLE	Black Magic Dive Shop	(708) 362-3483	ACTON	Acton Scuba	(800) 696-7282
TAVERNIER	Florida Keys Dive Center	(305) 852-4599	LOVES PARK	Loves Park Scuba Center	(815) 633-6969	BROCKTON	Get Wet Sports	(508) 583-0202
TAVERNIER	Floridive Dive Center	(305) 852-1432	MAYWOOD	Magnum Scuba, Inc.	(708) 345-1929	BUZZARDS BAY	Aquarius Diving Center	(508) 759-DIVE
TAVERNIER	Frank's Keyhaven	(305) 852-3017	MC HENRY	Sea Level Diving, Inc.	(815) 344-9732	DANVERS	Northeast Scuba	(617) 777-3483
TAVERNIER	Tavernier Dive Center	(305) 852-4007	MOLINE	Sentry Pool & Dive	(309) 797-9721	FALL RIVER	Fall River Marine Sports	(508) 673-9667
TEQUESTA	Adventure Scuba, Inc.	(407) 746-1555	MORTON	Aqua Diving School	(309) 263-0045	FITCHBURG	Andy's Sport Shop	(508) 343-6330
TEQUESTA	Subsea Aquatics, Inc.	(407) 744-6674	NAPERVILLE	Just Add Water Scuba	(708) 357-6264	FRAMINGHAM	East Coast Divers	(508) 620-1178
VERO BEACH	Deep Six Dive/Watersports	(800) 732-9685	NAPERVILLE	Scuba Diving Schools	(708) 393-7060	GLoucester	Cape Ann Divers	(508) 281-8082
WEST PALM BEACH	Ocean Sports	(407) 641-1144	NORMAL	Midwest Diving Specialist	(309) 452-0222	HARWICHPORT	Cape Cod Ski, Bike/Scuba, Inc.	(508) 432-9035
WEST PALM BEACH	The Scuba Club, Inc.	(407) 844-2466	PEORIA	Do Dive In Scuba	(309) 692-7600	HYANNIS	Cape Cod Ski, Bike/Scuba, Inc.	(508) 775-3301
WILLISTON	Blue Grotto Dive Resort	(904) 528-5770	ROCKFORD	Forest City Scuba Sports	(815) 398-7119	MALDEN	Aqua Lung Center	(617) 321-8830
ZEPHYRHILLS	Aquatic Adventures Scuba	(813) 788-6476	ROCKFORD	Venture Forth	(815) 229-5658	MARSHFIELD	North Atlantic Scuba	(617) 334-4087
GEORGIA			SKOKIE	Scuba Systems	(708) 674-0222	NORTH CHELMSFORD	Diver's World, Inc.	(508) 251-4895
ATHENS	Anchorline Scuba Center	(706) 548-2850	SPRINGFIELD	Adventures Underwater	(217) 573-3355	NORTH WEYMOUTH	South Shore Skindivers	(617) 331-1144
ATHENS	Charbon's Specialty Sports	(404) 548-8822	SPRINGFIELD	Scuba Sports	(217) 787-DIVE	NORTHAMPTON	Hampshire Scuba Supply	(413) 586-8759
ATLANTA	Divers Connection	(404) 364-9699	VILLA PARK	Underseas Scuba Center, Inc.	(708) 833-8383	ORLEANS	Cape Cod Ski, Bike/Scuba, Inc.	(508) 255-7547
ATLANTA	Diving World	(404) 634-4354	WOODSTOCK	Barracuda Brad's	(815) 33-SCUBA	PITTSFIELD	Aquatic Adventures	(413) 499-7205
AUGUSTA	Open Water Sports, Inc.	(706) 855-6511	FORT WAYNE	Caribbean Divers	(219) 489-7919	PLYMOUTH	Diver's Market	(508) 746-3483
BUFORD	Lanier Dive Center, Inc.	(404) 271-2860	BLOOMINGTON	Big Red Diver's Supply, Inc.	(812) 331-1110	SOUTH ATTLEBORO	Scuba Center	(508) 761-5015
COLUMBUS	Planet Ocean Scuba Center	(404) 563-8675	BLOOMINGTON	Southern Indiana Scuba	(812) 336-2527	SPRINGFIELD	Fantasea Divers	(413) 736-7411
COLUMBUS	Y. Y. Scuba	(706) 561-8515	EVANSVILLE	Aquatic Explorers	(812) 473-3326	WEST SPRINGFIELD	Holyoke Underwater Sply	(413) 737-2300
DECATUR	Atlanta Divers, Inc.	(404) 299-0511	EVANSVILLE	Evansville Scuba Center	(812) 424-6667	WESTFIELD	Westfield Water Sports	(413) 562-0709
DORAVILLE	Divers Supply Atlanta	(404) 939-3483	GREENFIELD	Leard's Underwater SVC	(317) 288-8144	WORCESTER	Central Scuba, Inc.	(508) 791-8125
DUBLIN	Diving Educators, Inc.	(912) 272-2426	INDIANAPOLIS	Linn's Sporting Goods & Scuba	(317) 894-3000	MICHIGAN		
DUBLIN	Scales & Tails & Scuba Too	(912) 272-1063	KOKOMO	Midwest Scuba Center	(317) 872-2522	ANN ARBOR	Divers, Inc.	(313) 971-7770
DULUTH	Dive..Dive..Dive..	(404) 476-7833	LOGANSPORT	Diving Dem	(317) 452-1034	BATTLE CREEK	Sub-Aquatic Sports & Service	(616) 968-8551
FAYETTEVILLE	Peachtree Dive Center	(404) 487-6609	DNP Diving	(317) 735-3483	BENTON HARBOR	Wolf's Divers Supply	(616) 926-1068	
GAINESVILLE	Ventures Sports	(404) 287-1180	MISHAWAKA	Mermaid's Quest Scuba	(219) 256-6875	DEARBORN	Tom & Jerry's Scuba Shop	(313) 278-1124
MACON	Divers Supply Macon	(912) 474-6790	MUNCIE	Leard's Underwater SVC	(317) 288-8144	ESSEXVILLE	Deep Six Scuba Schools	(517) 892-2715
MARIETTA	Dive Shop	(404) 424-7700	NEW ALBANY	Seaweed Divers	(812) 949-8060	FAR HAVEN	St Clair Scuba Training Center	(313) 725-1991
MARIETTA	Garrard Dive Educators	(404) 984-0382	TERRE HAUTE	Scubaland	(812) 234-0774	FARMINGTON HILLS	Don's Dive Shop, Inc.	(313) 477-7333
MARTINEZ	Full Sail Sports Adventure	(706) 855-6284	VALPARAISO	Scuba-Tank	(219) 477-4454	FLINT	The Dive Shop	(313) 732-3900
POOLER	Divers Supply Pooler	(912) 748-8004	VALPARAISO	Valparaiso Scuba Center	(219) 462-3038	GRAND HAVEN	Under Pressure	(616) 847-6000
POWERD SPRINGS	Diver's Depot	(404) 439-1984	WARSAW	Waterdog Scuba	(219) 267-2682	GRAND RAPIDS	Skamt Scuba Shop	(616) 369-9880
SAVANNAH	Diving Locker/Ski Chalet	(912) 927-6604	WEST LAFAYETTE	Lafayette Divers Supply, Inc.	(317) 743-1232	JACKSON	Divers Mast	(517) 784-5862
STOCKBRIDGE	Wet Set Scuba	(404) 389-9949	AMES	S & S Performance Diving	(515) 597-3581	KALAMAZOO	Dive Site	(616) 323-3700
VALDOSTA	Southern Ocean Sports	(912) 244-4084	CLEAR LAKE	Winsor's Pro Diving	(515) 357-3507	LANSING	ZZ Underwater World	(517) 485-3894
HAWAII			DAVENPORT	Mar's Marine & Dive Shop	(319) 324-8771	MT CLEMENS	Bruno's Dive Shop, Inc.	(313) 792-2040
CAMP SMITH	Aaron's Dive Shop	(808) 477-0514	DES MOINES	Two Rivers Dive Center	(415) 255-4556	MUSKEGON	West Michigan Dive Center	(616) 755-3771
HALEIWA	Surf & Sea	(808) 637-9887	OTTUMWA	Iowa State Skin Diving Schools	(515) 255-0001	NILES	Michigan Scuba	(616) 683-4502
HONOLULU	Aloha Dive Shop	(808) 395-5922	KANSAS	Frymoyer's Hunting & Marine	(515) 684-7468	PLYMOUTH	Divers, Inc.	(313) 971-7770
HONOLULU	Paradise Snorkel Adventures	(808) 923-7766	COLBY	Pirate's Den	(913) 462-6631	ST CLAIR SHORES	Advanced Aquatics Diving, Inc.	(313) 779-8777
HONOLULU	South Pacific Scuba, Inc.	(808) 735-7196	GARDEN CITY	Tri States Scuba School	(316) 275-0801	TRAVERSE CITY	Great Lakes Scuba	(616) 943-DIVE
HONOLULU	South Seas Aquatics	(808) 735-0437	MANHATTAN	Aggie Dive Shop	(913) 677-3286	MINNESOTA	Scuba North, Inc.	(616) 947-2520
HONOLULU	Underwater Sports of Hawaii	(808) 926-3483	OVERLAND PARK	Sonshine Scuba	(913) 677-3286	APPLE VALLEY	Scuba Daddy's Dive Shop	(800) 829-7032
HONOLULU	Underwater Sports of Oahu	(808) 926-3483	SHAWNEE MISSN	Scuba Adventures	(913) 962-2323	BRAINERD	Minnesota School/Diving, Inc.	(218) 829-5935
KAHLULU	Maui Dive Shop	(808) 871-2111	SPRINGDALE	Sportscs	(501) 751-0636	BURNSVILLE	Fantasea Scuba	(612) 890-DIVE
KAILUA	Aaron's Dive	(808) 262-2333	TOPEKA	Tonkina Dive Shop	(913) 233-DIVE	DETROIT LAKES	Tri-State Diving	(218) 847-4868
KAILUA KONA	Ecoscapes Dive & Adventure Ctr	(808) 329-7116						
KAILUA-KONA	Big Island Divers	(800) 329-6068						

EAGAN	The Dive Shop	(612) 452-4342	ALBUQUERQUE	New Mexico Scuba Center	(505) 271-0633	TIFFIN	Steve's Scuba	(419) 447-3483
HERMANTOWN	Innerspace	(218) 729-9028	ALBUQUERQUE	The Scuba Company	(505) 888-7990	TOLEDO	Diver's Paradise	(419) 535-6828
MAPLEWOOD	Northland Divers, Inc.	(612) 777-4278	LAS CRUCES	Divers II Dive Center	(505) 524-2729	VIENNA	Dive in Club Shop	(216) 856-6275
MINNEAPOLIS	Scuba Center	(612) 925-4818	SANTA FE	Inner-Vision Divers	(505) 988-5566	WILLOUGHBY	Anchor Dive Center/Willoughby	(216) 942-7575
MINNEAPOLIS	Scuba Outlet Store	(612) 823-7219	NEW YORK	SPA Scuba University	(518) 885-8554	OKLAHOMA	Clearwater Divers, Inc.	(405) 799-3483
MINNEAPOLIS	Smith Diving	(612) 789-DIVE	BALLSTON	Atlantic Divers	(718) 376-5454	MOORE	Muskogee	(918) 687-6344
MOORHEAD	Mick's Scuba, Inc.	(218) 233-0448	BROOKLYN	Stingray Divers	(718) 384-1280	NORMAN	Oklahoma Scuba Shop	(405) 366-8111
MOORHEAD	Paradise Divers	(218) 233-1758	BROOKLYN	Action Diver	(716) 836-6900	OKLAHOMA CITY	Chalet Sports Center	(405) 840-1616
NORTH ST PAUL	Over E-Z Dive Center, Inc.	(612) 770-2955	BUFFALO	Aqua Ventures	(607) 753-9990	OKLAHOMA CITY	Hi-Performance Scuba	(405) 755-2353
ROCHESTER	Minnesota Dive Center	(507) 288-8802	CORTLAND	Scuba Hut, Ltd.	(716) 385-6430	TULSA	Dive Site	(918) 664-5717
SAUK RAPIDS	Underwater Sports Shop	(612) 251-8967	EAST ROCHESTER	Diver's Rendez-Vous	(718) 478-4097	TULSA	Poseidon Adventures, Ltd.	(918) 749-DIVE
VIRGINIA	Land of the Loon Scuba	(218) 749-5470	ELMHURST	Southside Variety/Dive Center	(800) 564-7619	WEATHERFORD	Hutto's Mens & Ladies Dive Shop	(405) 772-2662
MISSISSIPPI			ELMIRA	Seafin Scuba Center	(607) 754-0873	OREGON		
BILOXI	Dive Five, Inc.	(601) 385-3764	ENDICOTT	Enchanted Diver, Inc.	(718) 470-6858	ALOHA	Pacific Watersports, Inc.	(503) 642-3483
D'IBERVILLE	Club Caribbean	(601) 392-7830	FLORAL PARK	Island Scuba Center, Inc.	(516) 546-2030	BROOKINGS	Reed's Divers Den	(503) 469-0497
JACKSON	Aquaspace Scuba	(601) 957-3096	FREEPOR	Ontario Scuba, Inc.	(315) 593-8040	CENTRAL POINT	Aqua Fantasea	(503) 776-3483
LONG BEACH	Dive Master Dive Center	(601) 868-0166	FULTON	Underwater World	(716) 569-5509	EUGENE	Eugene Skin Divers Supply	(503) 342-2351
OXFORD	Ron's Dive Shop	(601) 236-4992	JAMESTOWN	Stewart & Bergen	(518) 762-3181	EUGENE	Specialty Sports	(503) 686-0798
RIDGELAND	Sea Urchins III, Inc.	(601) 956-2184	KING'S PARK	Oceanrock	(516) 265-3507	GRANTS PASS	DC Scuba & Snorkel	(503) 476-8509
TUPELO	Scuba South	(601) 841-2838	KINGS PARK	Capitaland Scuba Center	(518) 783-3483	GRESHAM	Thrill Seekers	(503) 492-4386
MISSOURI			LATHAM	Tiedemann's Scuba Center	(516) 795-6560	GRESHAM	White Orca Divers	(503) 761-9643
BONNE TERRE	Bonne Terre Mine	(314) 731-5003	LEVITTOWN	Dolphin Divers	(718) 229-2300	KLAMATH FALLS	Adventure Diving	(800) 423-7989
BRIDGETON	West End Diving	(314) 731-5003	LITTLE NECK	Dive Locker	(914) 381-5935	KLAMATH FALLS	Aqua Toys	(503) 883-3483
COLUMBIA	Captain Nemo's Dive Shop	(314) 442-3483	MAMARONECK	The Scuba Shoppe	(516) 289-5555	PHOENIX	Reese's Dive Shop	(503) 535-2223
COLUMBIA	Columbia Discount Scuba	(314) 442-3896	MEDFORD	Middletown Scuba	(914) 343-2858	PORLTAND	Scuba Unlimited	(503) 777-3347
INDEPENDENCE	Skin 'N Scuba Dive Shop	(316) 358-0855	MIDDLETOWN	All American Sports Shop	(607) 334-5277	PENNSYLVANIA		
JEFFERSON CITY	Scuba Adventure	(314) 634-3483	PENDLETON	Leisure Pro	(212) 645-1234	ALLENTOWN	Sea-World Divers	(215) 432-6866
JOPLIN	Dive Masters	(417) 624-4400	NEW HARTFORD	Pan Aqua Diving	(212) 496-2267	ARDMORE	Aqua-Tech Dive Center	(215) 642-DIVE
KANSAS CITY	Dive Shop, Inc.	(816) 455-1492	NEW YORK	Aquatic World	(315) 458-1955	BAINBRIDGE	Bainbridge Sportmen's Club, Inc.	(717) 426-2114
KANSAS CITY	Divers Equip Scuba Center	(816) 763-5678	NORTH SYRACUSE	Aquatic Fantasies, Inc.	(716) 625-8035	BENSALEM	Mid-Atlantic Scuba Center	(215) 245-0141
KIMBERLING CITY	Port Of Kimberling Scuba	(417) 739-5400	PENDLETON	Swim King Dive Shop, Inc.	(516) 744-7707	BETHLEHEM	The Scuba Tank	(215) 868-7373
LAKE OZARK	Divers Village	(314) 365-1222	ROCHESTER	Adirondack Aquatics	(518) 792-5752	BRYN MAWR	Underwater World, Inc.	(215) 527-9681
LEBANON	Blue Water Divers	(417) 532-5008	ROCKY POINT	Sunrise-Sunset Surf/Dive/Sport	(516) 283-2929	CANONSBURG	Three Rivers Diving	(412) 745-5545
ICKING	Boiling Springs Dive Center	(314) 674-2043	SOUTH GLEN FALLS	Dutchess Diving Center, Inc.	(914) 462-0255	CHAMBERSBURG	Adventure Sports	(717) 267-3604
MANCHESTER	Inner World Diving Center	(314) 391-0005	SOUTHAMPTON	Marsh Scuba Supply, Inc.	(914) 452-8994	COGAN STATION	The Aquanaut Dive Shop	(717) 998-2486
ORONO GO	Captain John's Sports & Scuba	(417) 673-2724	STATEN ISLAND	Sea Horse Divers, Inc.	(718) 897-2885	CONSHOHOCKEN	Diver Services, Inc.	(215) 828-4236
OSAGE BEACH	Central Missouri Diving	(314) 348-6900	RIVERHEAD	Peconic Scuba	(516) 727-7578	ERIE	Diver's World	(814) 459-3195
POPLAR BLUFF	Aquascapes	(314) 785-0939	ROCHESTER	Aquatic Center Rochester, Inc.	(716) 334-1670	ERIE	Fantasias Water Gear	(814) 835-3483
SPRINGFIELD	Aquasports Scuba Center	(417) 883-5151	ROCKY POINT	Adirondack Aquatics	(518) 792-5752	FREEPOR	Scott's Scuba Service	(412) 295-3500
SPRINGFIELD	Sho-Me Scuba	(417) 882-3483	SOUTH GLEN FALLS	B.C. Divers & Supply	(607) 770-3483	GREENSBURG	Underwater Adventures	(412) 837-1070
ST CHARLES	The Great American Diving Co.	(314) 949-0880	SOUTHAMPTON	Underwater World, Inc.	(516) 679-9709	HONESDALE	Pisces Divers	(717) 253-0552
ST LOUIS	West End Diving	(314) 822-3005	STATEN ISLAND	East Coast Diving, Inc.	(718) 979-6056	HORSHAM	Underwater World, Inc.	(215) 672-4180
ST LOUIS	Y-Kiki Divers	(314) 469-8722	SYOSSET	Seascapes Dive Center	(516) 496-7833	IRWIN	Randy's Dive Shop, Inc.	(412) 863-0752
WEBSTER GROVES	Midwest Divers Supply	(314) 961-7245	SYRACUSE	National Aquatic Services, Inc.	(315) 479-5544	JERSEY SHORE	Sunken Treasure Dive Shop	(717) 398-1458
MONTANA			UTICA	Mahanna Scuba Center	(315) 738-0827	KINGSTON	Inland Water Sports, Inc.	(717) 288-3999
BOZEMAN	Sports Cove	(406) 585-9926	VALLEY STREAM	Drive, Inc.	(516) 872-4571	LANSDALE	Divers Den North, Inc.	(215) 361-8181
HELENA	Montana Outdoor Sports	(406) 443-4119	VESTAL	Underwater World, Inc.	(516) 732-4029	MCKEES ROCK	Aquatic Adventures, Inc.	(412) 788-4511
NEBRASKA			WANTAGH	Metro Scuba	(914) 736-6505	MEDIA	Anchor Line Dive Shop	(215) 566-2330
KEARNEY	Heartland Scuba Center	(308) 237-7943	WEST CHESTER COUNTY	Sea To Sea Diving Enterprises	(315) 589-3631	MORRISVILLE	Underwater Connection N.J.	(215) 295-2579
OMAHA	Divestar	(402) 391-1155	WILLIAMSON	Jones' Aqua Sports, Inc.	(518) 963-1150	PHILADELPHIA	Blue Horizons Dive Center	(215) 462-7587
OMAHA	Mid Coast Divers Supply	(402) 391-1559	YONKERS	Martini Scuba	(914) 779-7361	PITTSBURGH	Pittsburgh Scuba	(412) 621-9900
OMAHA	Underwater World	(402) 339-1884	NORTH CAROLINA	Water World Marine Services	(919) 569-8185	PITTSBURGH	Scuba South	(412) 531-5577
NEVADA			ATLANTIC BEACH	Wreckreational Divers	(919) 240-2244	RICHLAND	Jolly Roger Dive Shop	(717) 866-5535
BOULDER CITY	Colorado River Divers	(702) 293-6648	BEAUFORT	Discovery Diving Co., Inc.	(919) 728-2265	SINKING SPRING	Scuba Venture, Inc.	(215) 678-2688
CARSON CITY	High Sierra Sports	(702) 885-1891	BOONE	Two Worlds Divers	(704) 265-2255	SOUTHAMPTON	Doc's Divers, Ltd.	(215) 364-0408
CARSON CITY	Strictly Scuba	(702) 884-3483	CHARLOTTE	Adventure Scuba, Inc.	(704) 541-8541	WASHINGTON	Washington Scuba Center	(412) 228-8686
ELKO	Dawn's High Desert Divers	(702) 753-6706	JACKSONVILLE	Carolina Divers	(704) 523-4029	WEST CHESTER	Dudas Diving Duds	(215) 436-0176
LAKE TAHOE	Diving Edge	(702) 588-5262	JACKSONVILLE	Claremont	(704) 459-7440	RHODE ISLAND		
LAS VEGAS	AA1/Neptune Divers	(702) 452-5723	LONG BEACH	The Dive Shop	(704) 278-5611	EAST GREENWICH	Anderson Ski/Dive Center, Inc.	(401) 884-1310
LAS VEGAS	Desert Diver's Supply	(702) 438-1000	CONOVER	The Dive Experience	(704) 464-3483	SOUTH CAROLINA		
RENO	Sierra Diving Center	(702) 825-2147	DURHAM	Water World Marine Services	(919) 569-8185	AIKEN	Full Sail Sports Adventure	(803) 642-5411
RENO	Tropical Penguins Scuba	(702) 828-3483	GREENVILLE	Blue Dolphin Dive Center II	(919) 632-9838	ANDERSON	The Scuba Shop of Anderson	(803) 224-9205
SPARKS	Mountain Lakes Diving Center	(702) 359-3395	GREENSBORO	Ocean Wonders Dive Center	(919) 758-1444	BEAUFORT	Low Country Divers	(803) 522-9430
NEW HAMPSHIRE			HENDERSONVILLE	Dane Lane Enterprises	(704) 685-8574	CHARLESTON HEIGHTS	Wet Shop, Inc.	(803) 744-5641
KEENE	Underwater Sports of NH	(800) 457-4430	HOLDEN BEACH	Holden Beach Surf & Scuba	(910) 842-6899	COLUMBIA	Bottoms Up Dive Emporium	(803) 750-9092
LEBANON	New England Dive Center	(603) 448-1222	JACKSONVILLE	Bottom Time Dive Center	(800) 527-2822	GOOSE CREEK	Low Country Divers/Charleston	(803) 764-3164
MANCHESTER	Diver's Dive Shop	(603) 627-2536	JACKSONVILLE	Crystal Coast Diving	(800) 843-4834	GREENVILLE	Adventures In Scuba, Inc.	(803) 268-0631
NEWBURY	La Porte's Skindiving	(603) 763-5353	LONG BEACH	Carolina Cape Divers	(919) 278-5611	GREENVILLE	Divers World Scuba Diving School	(803) 277-8659
NORTH HAMPTON	North Atlantic Scuba Sales	(603) 964-6335	MOORESVILLE	The Sea Diver	(704) 663-4837	GREENVILLE	Downunder Dive Center	(803) 244-3373
SALEM	Water Sports, Inc.	(603) 898-1887	MOREHEAD CITY	Olympus Dive Center	(919) 726-9432	MT PLEASANT	Aqua Ventures	(803) 884-1500
WOLFBORO	Dive Winnipesaukee Corp.	(603) 569-2120	NEW BERN	Tarheel Divers, Inc.	(919) 633-4544	NORTH AUGUSTA	Neptune Dive & Ski	(803) 279-2797
NEW JERSEY			NEWPORT	Tropical Scuba Supply	(919) 393-8293	ROCK HILL	Scuba Ventures	(803) 328-0000
CHERRYHILL	New Jersey Scuba Supply	(609) 751-6702	OCRAKOE	Orcarole Divers, Inc.	(919) 928-1471	TAYLORS	The Scuba Connection	(803) 244-5282
COLLINSWOOD	Mar-Vel Underwater Equip, Inc.	(609) 962-8719	SILER CITY	Mermaid Aquatics	(919) 742-4124	RAPID CITY	Mick's Scuba Center	(605) 341-6550
DULELLEN	Certified Scuba Divers/Dulellens	(908) 752-0003	WILMINGTON	Aquatic Safari Scuba	(919) 392-4386	TENNESSEE		
EDISON	Bull Dog Diving	(908) 321-3757	WINSTON-SALEM	Wilmington Scuba & Water Sports	(919) 760-9086	BRISTOL	Adventure Diving	(615) 764-5777
FLEMINGTON	Scuba Store	(908) 806-3999	YAPON BEACH	Winston-Salem Dive Center	(919) 760-9226	JACKSON	Dive Shop Jackson, Inc.	(901) 668-3483
FREEHOLD	The Scuba Center	(908) 462-4660	OHIO	Yappon Beach Divers, Inc.	(919) 278-5611	JOHNINSON CITY	Scuba Center	(615) 924-3848
HAMILTON	Scuba Exp. & Aquatics	(609) 584-8008	AKRON	Deep Six Specialists, Inc.	(216) 724-8737	KNOXVILLE	Adventure Swim, Scuba & Travel	(800) 691-2525
HURFVILLE	The Dive Shop of NJ	(609) 589-3597	ATHENS	The Pedaler & The Packer	(614) 592-4630	KNOXVILLE	Ski-Scuba Center, Inc.	(615) 673-8733
MAPLE SHADE	Aqua-Tech Scuba Center	(609) 482-1996	CINCINNATI	Divers Den	(513) 232-3333	MADISON	Adventure Store	(615) 859-1400
MILLTOWN	Fantasea Scuba & Aquatic Ctr.	(908) 846-5200	CINCINNATI	Eastgate Scuba	(513) 752-7681	MEMPHIS	H2O Scuba Center	(901) 458-5006
MORGANVILLE	East Coast Diving Service	(908) 591-9374	COLUMBUS	New Depths Dive Center	(601) 329-1768	MEMPHIS	The Dive Shop	(901) 763-3483
NEPTUNE CITY	Professional Divers, Inc.	(908) 775-8292	COLUMBUS	Underwater Connection	(614) 487-9777	MURFREESBORO	Adventure Technologies	(615) 890-3948
PLEASANTVILLE	Atlantic Divers, Inc.	(609) 641-7722	COLUMBUS	Ted's Scuba	(216) 224-1112	NASHVILLE	Blue Water Scuba	(615) 356-9340
PRINCETON	Princeton Aqua Sports	(609) 924-4240	COLUMBUS	B & K Diving Service	(419) 524-3557	NASHVILLE	Diving Adventures, Inc.	(615) 333-3483
PT PLEASANT	Inlet Dive Center	(908) 899-4545	COLUMBUS	Treasure Cove Scuba	(216) 544-6230	NASHVILLE	Scuba South, Inc.	(615) 244-6775
RAMSEY	Blue Water Divers	(201) 327-2822	CONNEXAUT	Underwater Warehouse	(513) 773-2027	TEXAS		
ROBBINSVILLE	Underwater Connection NJ	(201) 295-2579	DAYTON	Ask Water Sports, Inc.	(614) 889-2822	ABILENE	A.K.A. Divers	(817) 275-2181
ROCHELLE PARK	Underwater Sports, Inc.	(201) 843-3340	DAYTON	Underwater Dive Center	(216) 324-3434	ARLINGTON	School Of Scuba	(915) 673-2949
ROCKAWAY	Elite Divers, Inc.	(201) 586-2214	DUBLIN	Sand Dollar Divers, Inc.	(513) 858-2700	ABILENE	The Dive Spot	(915) 673-3483
SEWELL	The Dive Shop Of NJ	(609) 589-9336	FAIRFIELD	Aqua Specialists	(216) 521-4855	AMARILLO	Scuba Sportz	(806) 355-3443
SHIP BOTTOM	Triton Divers	(609) 494-5599	LAKEWOOD	Scuba University	(216) 224-1112	ARLINGTON	Double D Diving, Inc.	(512) 331-2199
STIRLING	Valley Sports	(908) 580-1188	MANSFIELD	Scuba Center	(513) 890-6900	AUSTIN	Great Outdoors	(512) 453-1852
TOMS RIVER	Underwater Discovery	(908) 270-9100	NILES	Treasure Cove Scuba	(513) 773-2027	AUSTIN	Oak Hill Scuba	(512) 892-5372
TRENTON	Lang's Ski & Scuba	(609) 538-1970	PIQUA	Underwater Warehouse	(419) 734-2240	AUSTIN	Scubaland Adventures	(512) 339-0733
UNION	Certified Scuba Divers of Union	(908) 851-2218	PORT CLINTON	New Wave	(614) 889-2822	AUSTIN	Tom's Dive & Ski, Inc.	(512) 451-3425
WESTFIELD	Treasure Cove Divers	(908) 654-8808	ROOTSTOWN	Jrs School of Scuba	(216) 325-2233			
NEW MEXICO			SANDUSKY	Dale's Diving Shop	(419) 625-4134			
ALAMOGORDO	Divers II Dive Center	(505) 437-5610						

BELTON	Totally Scuba	(817) 939-1458	EAST WENATCHEE	Orca Scuba Center	(509) 884-2281	LONDON	Ken's Dive Locker	(519) 434-5349	
BROWNSVILLE	Batsell's Sporting Goods	(512) 542-2526	FEDERAL WAY	A & E Aquatics	(206) 941-3115	NEPEAN	Discover Scuba	(613) 723-DIVE	
CARROLLTON	Adventure Beneath Sea	(214) 484-3483	FRIDAY HARBOR	Emerald Seas Aquatic Center	(206) 378-2772	OAKVILLE	Oakville Divers, Ltd.	(416) 842-8881	
CARROLLTON	For Divers Only	(214) 317-2822	GIG HARBOR	Miller's Dive & Marine	(206) 858-7989	OTTAWA	Alpha Dive Center Bank	(613) 567-1402	
COLLEGE STATION	Paradise Scuba	(409) 846-9396	KENNEWICK	Under Sea Adventure, Inc.	(509) 735-0735	PEMBROKE	Sea-Dive Scuba Centre	(613) 732-9518	
COLLEGE STATION	Sea-U Underwater	(409) 693-0104	MARYSVILLE	Blue Dolphin Diving Center	(206) 653-2834	POINT EDWARD	Bluewater Dive	(519) 337-DIVE	
CLUTE	M & M Scuba	(409) 299-DIVE	OAK HARBOR	Whidbey Island Dive Center	(206) 675-1112	PORT ELGIN	Hog Divers II	(519) 389-3629	
CONROE	Conroe Scuba	(409) 539-1414	OLYMPIA	Underwater Unlimited	(206) 943-8612	ST CATHARINES	Dan's Dive Shop, Inc.	(416) 934-2167	
CONROE	Golden Mermaid Scuba	(409) 539-DIVE	PORT ANGELES	Olympic Divers	(206) 452-5264	SUDBURY	Water Ways	(705) 566-8571	
CORPUS CHRISTI	Aquinox Scuba	(512) 949-9491	SEATTLE	Underwater Sports, Inc.	(206) 362-3310	TILLSONBURG	B.C. Dive Centre	(519) 842-4144	
CORPUS CHRISTI	Ascuba Venture	(512) 985-1111	SILVERDALE	Silverdale Scuba	(206) 692-1086	TOBERMORY	G & S Watersports, Ltd.	(519) 596-2200	
DALLAS	Dive West	(214) 750-6900	SPOKANE	Atlantis Aquatics	(509) 534-2144	TORONTO	Diver Down	(416) 787-0264	
DENTON	Island Divers, Inc.	(817) 383-3483	SPOKANE	Landlocked Divers	(509) 534-7318	TORONTO	Tam Dive, Ltd.	(416) 861-1664	
DUNCANVILLE	Diver's Dream	(214) 298-9000	SPOKANE	Scuba Center of Spokane	(509) 326-4653	TORONTO	The Water Sports Store	(416) 488-1000	
EL PASO	Desert Scuba	(915) 593-3483	TACOMA	Pacific Reef	(206) 564-0356	TORONTO	W. C. Water Adventures	(416) 757-6935	
EL PASO	Inner Space S.C.U.B.A.	(915) 532-4107	TACOMA	Pro Divers Supply	(206) 588-8368	QUEBEC	Waterline Sports, Inc.	(416) 488-6000	
EL PASO	M & W Diving	(915) 581-3329	VANCOUVER	Dolphin Too, Inc.	(206) 892-1633	NOYAN	Noyan Aqua Sports, Inc.	(514) 294-2525	
FORT WORTH	Lone Star Scuba	(817) 377-3483	VANCOUVER	Thunder Reef Divers	(206) 573-8507	ST-JEAN-SUR-RICHELIEU	Aqua Futur	(514) 348-8818	
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GRAND PRAIRIE	Tucker's Dive Shop, Inc.	(214) 264-7305	YAKIMA	Leonardo's Dive Inn	(509) 248-4876	REGINA	The Dive Shoppe Wescan	(306) 347-0025	
GRAPEVINE	Grapevine Scuba	(817) 488-4999	WEST VIRGINIA	Divealot Scuba Center	(304) 255-2664	CAYMAN ISLANDS			
HITCHCOCK	Treasure Cove Scuba	(409) 938-4413	BECKLEY	Divers Ark	(304) 768-4828	GRAND CAYMAN	Bob Soto's Diving, Ltd.	(809) 949-2022	
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HOUSTON	Divers Choice	(800) 256-6153	HUNTINGTON	Interstate Aquatics	(304) 296-1501	GRAND CAYMAN	Ralphie For The Love of Diving	(809) 949-3099	
HOUSTON	International Scuba	(713) 768-5449	ST ALBANS	St Albans Scuba	(304) 727-2586	GRAND CAYMAN	Uncle Bill's	(809) 949-7601	
HOUSTON	Kenlee's West	(713) 784-1173	SUMMERSVILLE	Sarge's Dive Shop	(304) 872-1782	ENGLAND			
HOUSTON	Sea Sports Scuba	(713) 862-3483	TRIADELPHIA	T.L. Velas Diving & Supply	(304) 547-1962	LONDON	The Dive Shop	(081) 523-5900	
HOUSTON	Sea Sports Scuba	(713) 777-3483	WISCONSIN	APPLETON	Mountain Bay	(414) 731-3652	GUAM		
HOUSTON	Sea Sports Scuba	(713) 580-7777	BARABOO	3 Little Devils, Inc.	(608) 356-5866	MEXICO			
HUMBLE	W. W. Diving	(713) 446-8861	BAYFIELD	Apostle Island Ship & Dive	(715) 779-5000	MONTERREY	Escafandra Dive Center	(52) 83-780839	
HUNTSVILLE	Huntsville Scuba	(409) 291-9999	EAU CLAIRE	Underwater Ventures, Inc.	(715) 834-0002	NETHERLANDS ANTILLES			
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LANCASTER	Divers Isle	(214) 230-1481	HAYWARD	Winsor's Pro Diving	(715) 634-5122	CURACAO	Aqua Diving Curacao	(599) 9-649700	
MIDLAND	Stovall's Scuba Center	(915) 699-5959	KENOSHA	Water World, Inc.	(414) 654-4434	CURACAO	Aqua Diving Curacao	(599) 9-649288	
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PLANO	Dive West	(214) 424-6563	MENOMONEE FALLS	The Underwater Connection	(414) 251-8283	HALIFAX COUNTY	Divers World	(902) 876-0555	
PLANO	Ocean's Window Scuba Training	(214) 423-3483	MILWAUKEE	Hi-Lo Scuba	(414) 672-5035	PHILIPPINES			
ROUND ROCK	Echo Valley Scuba Center	(512) 388-0880	RACINE	Reefpoint Diving Center, Ltd.	(414) 886-8501	METRO MANILA			
SAN ANGELO	Adventure Sport & Clothier	(915) 949-9244	SHEBOYGAN	Lakeshore Scuba, Ltd.	(414) 457-3483	MAKATI			
SAN ANGELO	Mike's Dive World	(515) 947-1662	STEVENS POINT	Divepoint Scuba Center	(715) 344-3483	PUERTO RICO			
SAN ANTONIO	Bar's ScubaFun Center	(512) 829-1699	THIENSVILLE	Dive U.S.A.	(414) 242-3483	BAYAMON	Blue Water Scuba	(809) 730-0707	
SAN ANTONIO	Dive Masters of San Antonio	(210) 684-DIVE	WAUKESHA	Divers Dreams Scuba Center	(414) 524-8833	BOQUERON	Boqueron Dive Shop	(809) 851-2155	
SAN ANTONIO	Trident Diving Equipment	(512) 734-7442	WAUSAU	Klein Scuba, Inc.	(715) 675-6722	DORADO	Dorado Marine Center	(809) 796-4645	
SAN ANTONIO	Tropical Divers/RGC, Inc.	(512) 490-DIVE	WAUWATOSA	Bennett Academy of Ski & Scuba	(414) 258-6440	HUMACAO	Coral Head Divers	(800) 635-4529	
SAN MARCOS	The Dive Shop	(512) 396-3483	WEST BEND	Divers Delight Scuba & Charter	(414) 334-6057	ISABELLA	La Cueva Submarina	(809) 872-1094	
SHERMAN	Scuba Etc. Of Sherman	(903) 868-0604	WYOMING			ISLA VERDE	Ocean Sports	(809) 268-2329	
SOUTH PADRE ISLAND	American Diving	(210) 943-7124	JACKSON	Teton Aquatic Supplies	(307) 733-3127	LA PARGUERA, LAJAS	Calypso Divers, Inc.	(809) 899-6212	
SPRING	Adventure Quest	(713) 320-0001	BAHAMAS			LAJAS	Parguera Divers	(809) 899-4171	
TEMPLE	Scuba Plus	(817) 773-4220	ABACO ISLAND	Brenda's Dive Shop	(809) 365-4411	MAYAEUEC	The Dive Shop	(809) 833-6455	
UNIVERSAL CITY	Duggan Diving Enterprises	(512) 658-7495	CHRIST CHURCH	Explorers Barbados	(809) 435-6542	RAMSEY	Aquatica Underwater Adventure	(809) 890-6071	
VICTORIA	Dolphin Divers	(512) 576-6770	BARBADOS			SAJARDO	Caribbean Diver Institute	(809) 860-2177	
WEBSTER	Discover Scuba	(713) 480-8530	ST JAMES HOLETOWN	Dive Barbados	(809) 432-5980	SAN JUAN	Antilles Diving Service, Inc.	(809) 793-1164	
WICHITA FALLS	Double D Divers	(817) 322-5934	SAN PEDRO TOWN	Our Island Divers	(501) 26-2151	SAN JUAN	Caribbean School of Aquatics	(809) 723-4740	
UTAH			CANADA			SAN JUAN	Mundo Subarino, Inc.	(809) 791-5764	
BOUNTIFUL	Dive Shop	(801) 292-8164	ALBERTA			SAN JUAN	Scuba World	(809) 753-3897	
NEAR GRANTSVILLE	Bonneville Sea Bass	(801) 884-3874	CALGARY	Scuba Trek Aquatics, Inc.	(403) 283-4983	VEGA BAJA	Fantasy Scuba	(809) 858-6371	
OGDEN	Dive Utah	(801) 394-8842	CALGARY	Skin Scuba Schools	(403) 250-7365	YAUCAO	Ocean Scuba Shop	(809) 856-8206	
OREM	Water World Divers	(801) 224-8181	CALGARY	Sunfish Sea Sports	(403) 288-7427	SINGAPORE			
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SALT LAKE CITY	Scuba Utah	(801) 942-2100	EDMONTON	Ocean Sports	(403) 432-1904	SPAIN			
VERNAL	Atlantis Divers	(801) 789-3616	LETHBRIDGE	Anderson Aquatics	(403) 328-5040	PALMA DE MALLORCA	Mediterraneo 100% Sub	(34) 71-466661	
VERMONT			CAMPBELL RIVER	Beaver Aquatics, Ltd.	(604) 287-7652	PHUKET	Marina Divers		
BURLINGTON	Waterfront Diving Center	(802) 865-2771	CAMPBELL RIVER	Seafun Divers, Ltd.	(604) 287-3622	VIRGIN ISLANDS			
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RUTLAND	Great Outdoors Trading	(802) 773-6331	N. VANCOUVER	Capilano Divers Supply	(604) 986-0302	CHARLOTTE AMALIE	St Thomas Diving Club	(800) 538-7348	
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ST ALBANS	Scuba Center	(802) 527-1111	PENTICTON	Sundown Diving	(604) 492-3352	ST CROIX	Anchor Dive Center	(809) 778-1522	
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VIRGINIA			RICHMOND	West Coast Scuba Centre	(604) 942-4838	ST CROIX	Cruzan Divers, Inc.	(809) 772-3701	
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ALEXANDRIA	Splash Dive Center	(703) 548-6403	VANCOUVER	Tidalwave Diving Co.	(604) 885-3328	ST CROIX V.I.	Divers, Ltd.	(809) 773-8046	
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NORFOLK	Atlantic Caribbean Dive	(804) 623-3483	BARRIE	The Wet Shop Barrie	(705) 722-5859	MARABELLA	Scuba Specialists	(809) 658-3861	
PORTSMOUTH	Chesapeake Bay Diving	(804) 397-0422	BRAMPTON	Buccaneer Dive Shop	(416) 793-7234				
PULASKI	Diver Dan's	(703) 980-0973	BRESLAU	Dean's Sport and Dive	(519) 648-3121				
RADFORD	Divers Corner	(703) 639-6478	BURLINGTON	Floar N' Flag/RELITE Repair Ctr	(416) 333-DIVE				
RESTON	Coral Edge Divers, Inc.	(703) 318-0170	COLLINGWOOD	Downunder Dive and Scuba	(705) 444-0041				
RICHMOND	Scuba Center	(804) 741-8899	ESSEX MMI	Scuba Center	(519) 776-6060				
RICHMOND	The Dive Shop	(804) 353-1888	GRAVENHURST	Scuba Shack	(705) 687-5879				
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VIRGINIA BEACH	Lynnhaven Dive Center	(804) 481-7949	HAMILTON	Cea Canucks	(416) 385-3064				
VIRGINIA BEACH	Rudee Inlet Dive Center	(804) 425-2997	KANATA	Kanata Diving Supply	(613) 592-9169				
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WOODBRIDGE	Divers Get Away	(703) 490-3483	LONDON	Deep Three Enterprises	(519) 672-9180				
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BAINBRIDGE IS	Exotic Adventures, Ltd.	(206) 842-1980							
BELLINGHAM	Adventures Down Under	(206) 676-4177							
BREMERTON	Puget Sound Dive Enterprises	(206) 377-0554							
COUPEVILLE	Island Dive Shop	(206) 678-3927							

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C. Make a mental note to see your family physician when you return home.

If you answered A, B or C you may be putting yourself at risk for permanent neurological damage. Tingling, dizziness and itching are warning signs of DCS, a.k.a. "the bends." DCS is one of the most serious conditions divers face. And, while the incidence isn't high, it's important that you be able to recognize the symptoms and seek medical attention immediately.

The best opportunity for successful treatment is during the first hours after the incident. Yet, of the cases reported to DAN in 1992, 25 percent of women and 17 percent of men made a second or third dive after noticing symptoms. Some divers have even flown home to get medical attention, apparently unaware that by flying at altitudes greater than 1,000 feet they were twice as likely to suffer long-term residual symptoms than if they had gotten immediate attention.

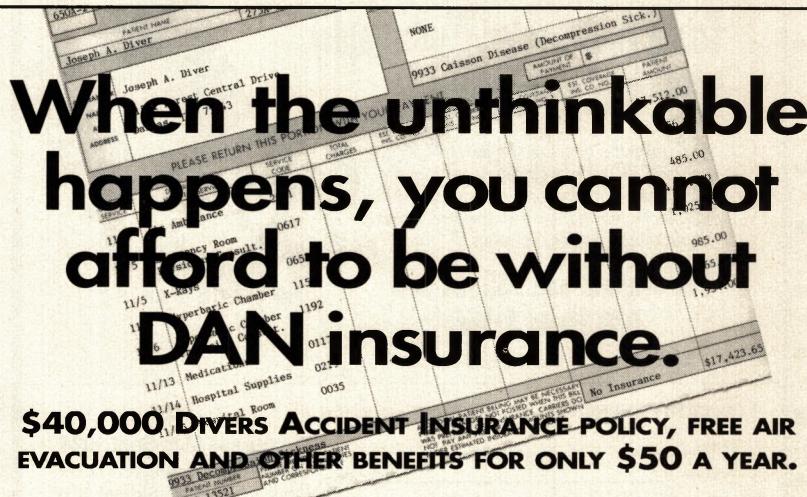
TINY BUBBLES

When you dive, the added pressure of water on the body causes your tissues to absorb more nitrogen than they would at the surface. When the

pressure on your body is reduced—by surfacing after the dive—nitrogen begins to leave body tissues. Dive tables are designed to limit the amount of nitrogen your body absorbs to that which can be safely unloaded through normal respiration. The nitrogen moves from tissues into your blood, the blood circulates through your lungs, the nitrogen diffuses through the alveolar membranes and is exhaled. If your body

absorbs more nitrogen during dives than can be released through aspiration, the nitrogen will come out of solution—return to its gaseous state and form bubbles—while still in tissues or the bloodstream. Bubbles forming in tissues near joints cause the pain commonly associated with the bends.

When high levels of bubbles occur, as can happen when divers exceed the dive table limits, complex



IF YOU WERE INVOLVED IN A SERIOUS DIVING ACCIDENT, could you afford the tremendous financial expense that could result?

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- 24-hour Emergency Hotline.
- The bi-monthly DAN magazine *ALERT DIVER*.
- A free subscription to Rodale's *SCUBA DIVING* magazine.

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UNLUCKY 7 COMMON SYMPTOMS OF DCS

DCS symptoms usually appear within 15 minutes to 12 hours after surfacing. But in severe cases, symptoms may appear sooner. Conversely, flying may delay symptoms. On average, 60 percent of all symptoms will occur within the first 30 minutes. Here's what to look for:

- 1 Joint pain (occurs in 65 percent of all cases)
- 2 Numbness and tingling (55 percent)
- 3 Weakness (26 percent)
- 4 Headache (24 percent)
- 5 Dizziness (23 percent)
- 6 Extreme fatigue (23 percent)
- 7 Nausea (14 percent)

reactions take place in the body. Blood clotting in the veins around the spinal cord may cause numbness and paralysis.

FIRST THINGS FIRST

If you've just completed a dive and the symptoms of decompression sickness occur (see "Unlucky 7"), tell the divemaster and seek medical treatment immediately. Even if you're unsure if you have DCS, don't hesi-

tate to inform the divemaster of your symptoms. Any symptom that you may experience after a dive could indicate a problem. Divemasters and instructors are trained to get you the proper first aid treatment.

The first thing they'll do is put you in a reclining position. Next, you'll be given 100 percent oxygen by a demand-valve mask. If you're not nauseated or vomiting, you may also be given fluids for rehydration.



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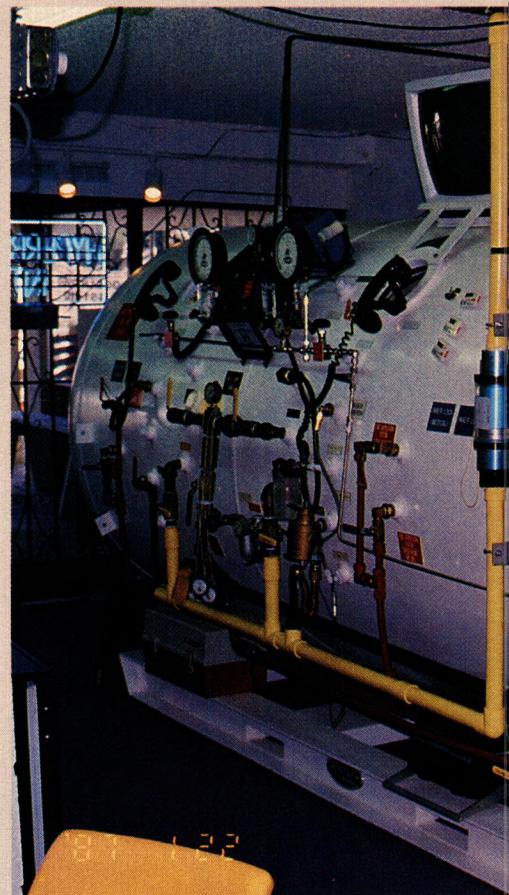
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The next step is to get you to a medical facility or hospital. Here you'll be put on oxygen again and given fluids intravenously to rehydrate the body and assist in the off-gassing of nitrogen. You'll then be taken to the nearest hyperbaric center.

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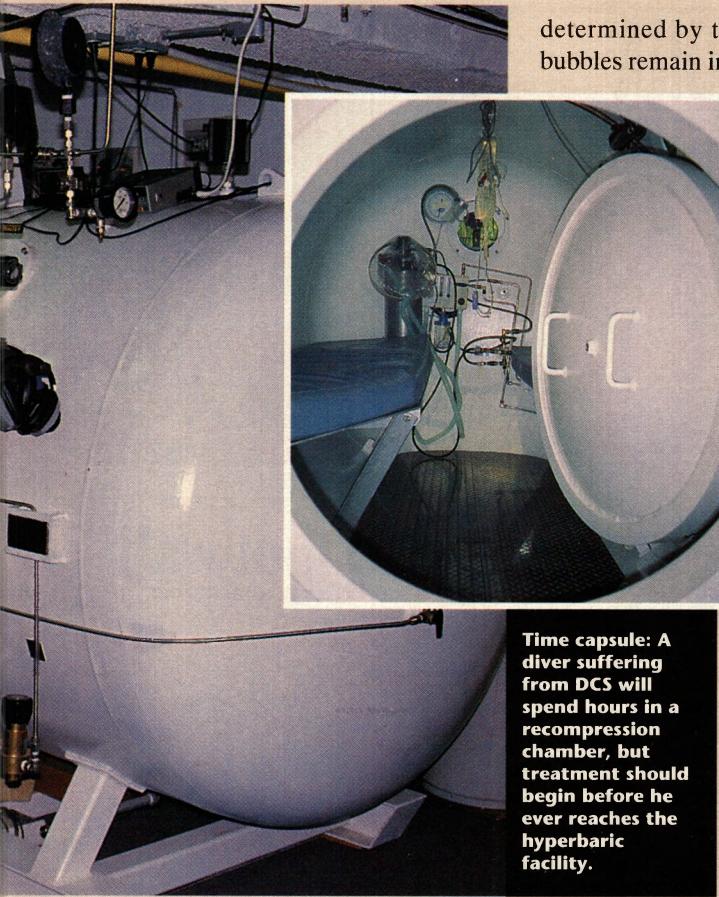
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BEATING THE ODDS

While early treatment gives you the best chance for full recovery, there have been cases when hyperbaric therapy didn't cure all symptoms. About 47 percent of all divers treated in a hyperbaric chamber still had pain or neurological symptoms after treatment. In time, the symptoms should gradually decrease and the majority will go away completely. On average, about 15 percent of all divers continue to experience symptoms after three months. But these are usually divers who had a severe case of DCS. It all comes down to where the bubbles land in the tissues and the number of them. When you're dealing with bubbles in the central nervous system, damage is



determined by the length of time the bubbles remain in the tissue. The longer they're there, the greater the likelihood they will cause long-term damage. And many times the damage is permanent: loss of strength and numbness in arms, fingers, legs and toes.

While some cases won't turn out well, the majority do, in large part because the diver has sought immediate treatment. Be suspicious of any symptom you may experience after a dive. Communication and immediate action are the best ways to reduce the chances of having permanent damage.

Time capsule: A diver suffering from DCS will spend hours in a recompression chamber, but treatment should begin before he ever reaches the hyperbaric facility.

Divers Alert Network (DAN) is an international tax-exempt nonprofit member-supported diving safety organization based at Duke University Medical Center in Durham, N.C. Since 1980, DAN's primary mission has been to help make diving safe for recreational scuba divers. It accomplishes this goal by providing medical consultations for injured divers, by collecting and analyzing diving accident and fatality information, by promoting educational programs, and by offering diving accident insurance and worldwide medical evacuation coverage. DAN is supported in these endeavors by a network of diving medical experts, hyperbaric facilities, instructors, stores, training agencies, clubs and manufacturers.



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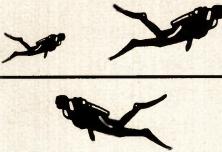
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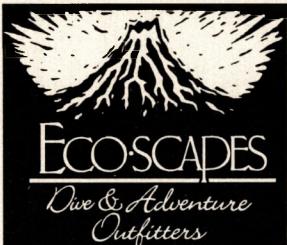
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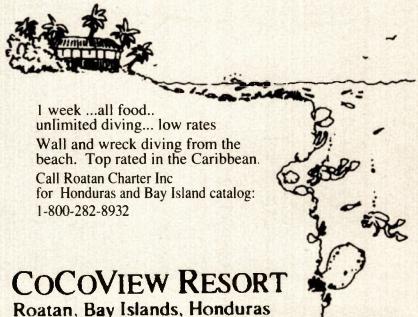


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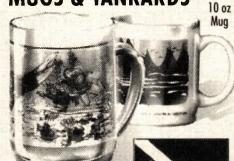
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THE WATER PLANET

THE WILLY MAZE

The cetacean consciousness raised by last summer's hit movie has come under the Norwegian knife.

BY DAVID ABRAHAMSON

By any measure, last summer was the Season of the Cetacean, the Summer of the Whale. It was as if much of the country found itself caught up in the wake of a whale, suspended in eddies of fiction and fact, roiled by swirls of supposition and science. And despite the inevitable froth of human folly, from some place far below the surface of matters, the world was moved by animate currents of both magnificence and mystery.

Free Willy, The Movie

Starring a troubled lad and his pal, Willy, a 22-foot, 7,000-pound orca (*Orcinus orca*), it was one of Hollywood's summer hits. Never mind the cardboard characters, the transparent plot and the theme's unrelieved self-righteousness. Both the whale who played Willy, a 13-year-old named Keiko, and his stunt double, a huge high-tech model fitted with 3,000 pounds of urethane rubber skin, were majestic.

Free Willy, The Cause

Inspired by the movie's warm reception, animal rights activists began a campaign to liberate Keiko from El Nuevo Reino Aventura, the Mexico City amusement park where he has been captive in a small tank since 1985. *Free Willy's* producers, Lauren Shuler-Donner and director Richard Donner (his credits include *Lethal Weapon*) were explicitly supportive of the movement. The 800 number of the nonprofit Earth Island Institute they included in the film's closing credits received

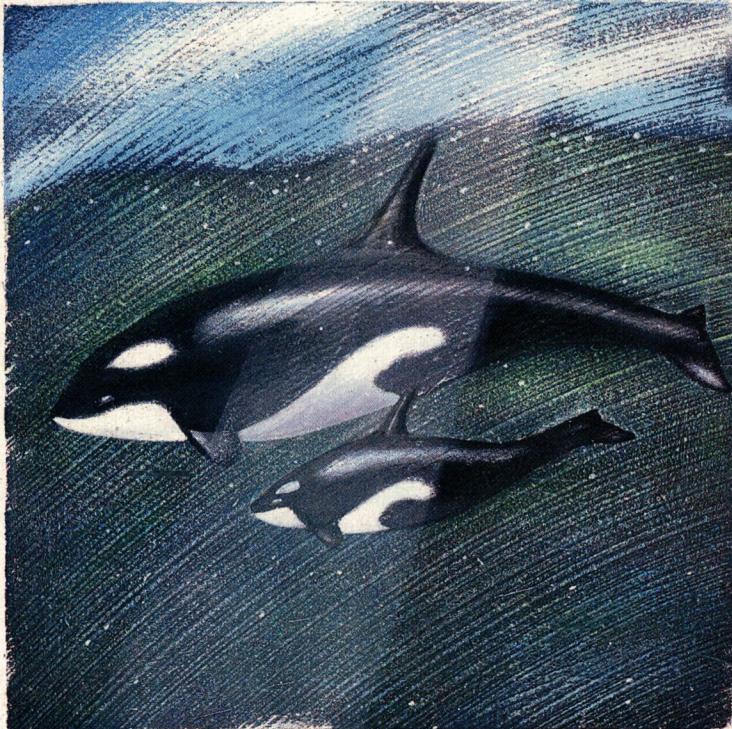
40,000 calls the first weekend requesting information on whale protection.

Medical, behavioral and economic factors cloud Keiko's future. Afflicted with a chronic, possibly contagious psoriasis-like skin condition around his pectoral fins and tail flukes, Keiko can never be placed with other orcas. Because he was a very young adolescent when originally captured near Iceland in 1982, there also was some debate about his ability to survive in the wild. And lastly, though his Mexican owners are willing to sell, the price is \$1 million. The Donners did raise \$200,000 from Warner Bros., the movie's distributor, and did suggest that perhaps Keiko could be "freed" to live in a sealed Cape Cod inlet, but both the full funding and final plans for an eventual home for Keiko remain in doubt.

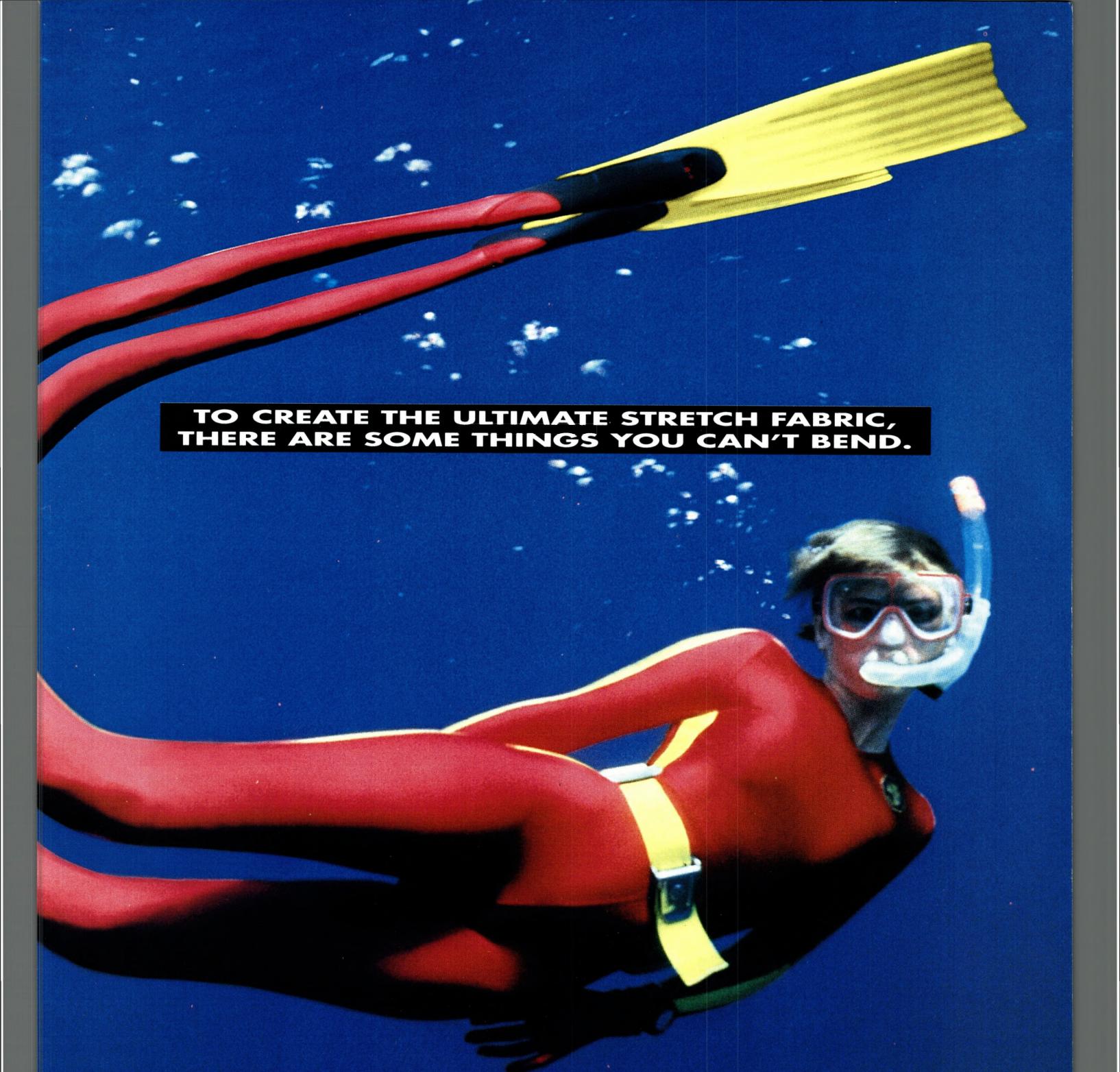
Free Willy, The Larger Cause

At latest count, more than 450 dolphins (*Delphinidae*), almost

three dozen belugas (*Delphinapterus leucas*), 20 orcas, 10 false killer whales (*Pseudorca crassidens*) and two short-finned pilot whales (*Globicephala macrorhynchus*) were held captive in the United States. Government regulations are strict and generally well enforced, so instances of actionable abuse at U.S. aquariums and amusement parks have been rare, and it is clear that large operators such as Sea World take exemplary care of the orcas. (Continued on page 108)



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